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AFTER BUSINESS HOURS

Here, There and Everywhere

(By William Beecham.)

The views expressed in articles published in this section are those of the contributors and not necessarily those of "The Australasian Manufacturer." They are selected for their interest value, whether controversial or not, and the comments of readers on the subject discussed are always welcomed by the Editor.

A gentleman is a husband who doesn't say anything when his wife forgets she's a lady.

"We find what we look for," says a Canadian business executive. "If we expect imperfections in our assistants we will see that side of their work much to their disappointment and our own. In time they will become confused in our presence and make more absurd mistakes. On the other hand, if we expect good results we shall see them, too. By giving recognition and encouragement we will observe a growing improvement. Our presence will stimulate accuracy and confi-

dence—under such circumstances it will be most welcome. Of course, we should not condone carelessness, poor work nor low standards, no matter where we place the emphasis. But these shortcomings should be talked over in private with the idea of counselling and helping to do better next time. Good management endeavours to secure the release of human energy, intelligently directed by the man himself. In this connection, we must bear in mind that the influence of fear is to restrict and that faith has an expanding influence. No one has yet found the depths and breadth of a man's capacity, but it is a known fact that some managers

get better results than others with the same men."

Books.

I loathe the best seller. But much as I dread it, I plough my way through it. Lest asked if I've read it.

A man may be justified in speaking a sharp word to a woman when he has to get it in edgeways.

Our Canadian executive again: A good manager can take average men and secure better-than-average results just as a good cook can take an average steak and by proper preparation and handling make it highly palatable. Conversely, a poor manager can ruin the performance of the best men just as a poor cook can destroy the delicious qualities of a choice steak by hard broiling. Management is a form of influence. Men take their cue from the man above. The line of authority and communication carried down what is emphasised at the top or at a dominating point in the line. If the emphasis is over-critical, cold, analytical or even a trifle unfriendly, no one can guarantee the terminal points will be within the organisation. They have been known to go so far as to affect the customers unfavourably.

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(Dorothy Parker's famous words—Men never make passes at girls wearing glasses.)

If and when the meek inherit the earth it looks as if they will inherit enough debt to keep them meek.

Factory owners with a large labour turnover should realise that such continued turnover causes the following losses: The cost of training, informal as well as formal, is wasted when an employee

leaves. Production is reduced during the new employee's training period. New employees have a higher accident potentiality rate. Clerical work in connection with new employees is non-productive. Inexperienced employees cause increased wear and tear of plant and equipment. Inexperienced employees increase the output of spoiled and unsatisfactory work. The departure of a worker frequently has an unsettling effect on workers who remain and often reduces production.

A factory executive who prides himself on a very low labour turnover has a list of questions which, he says, should be in every hiring executive's mind: Has the new worker had working conditions properly explained to him? Been introduced properly to his foreman and to his instructor? Has his initial introductory training been satisfactory? Does he know the rules of the factory or unit? Has his interest in his work been aroused? Does he understand the organisation? Does he understand his possible earnings (if incentive payments are made) and the possibilities of advancement? Does he know whom to approach if he is in any sort of trouble with his work? Such a list of questions might well be studied.

Answer This.
Breathes there a man with soul so dead,
Who never to himself hath said,
When his shirt stud flew under the bed,
... Something we cannot publish?

Psychologist. — A man who watches everybody else when a good-looking, scantily-clad young woman enters the room.

Recruitment to a new firm, it has been said, should really not be easy. For greater care in the recruitment of your workers pays big dividends. The ideal to be aimed at can be summed up in these words: "Entrance to our firm is not easy, but when a man, woman, boy or girl is employed by us it should be regarded as a real misfortune when he or she wishes to leave."

(Turn to page 34.)

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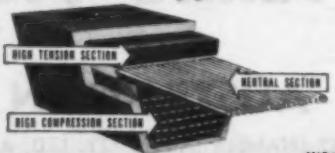
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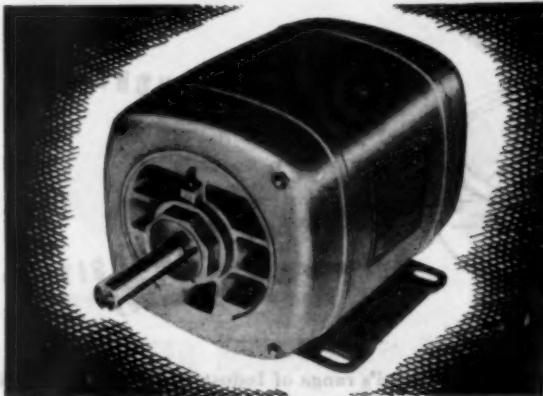
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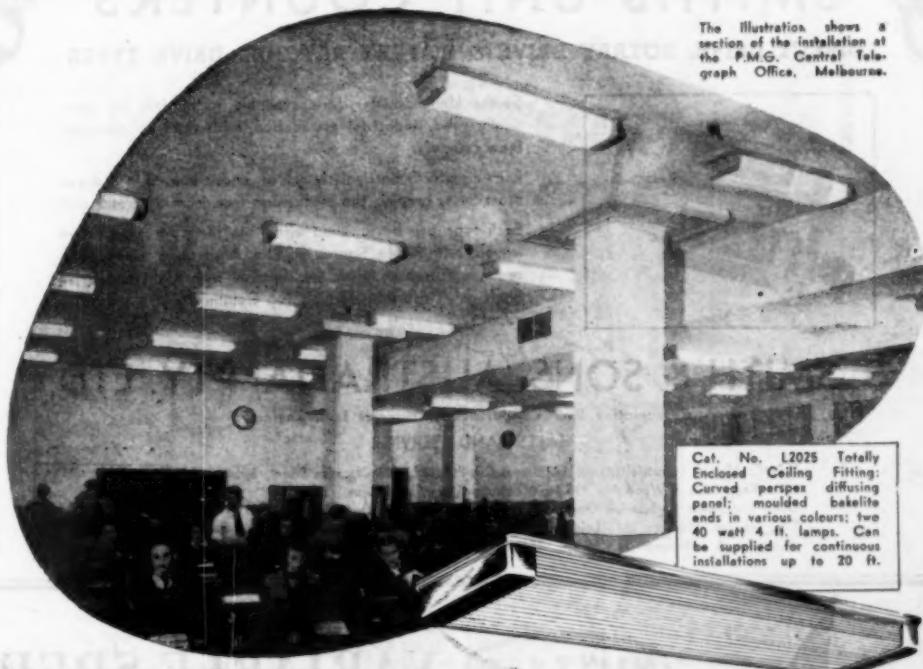
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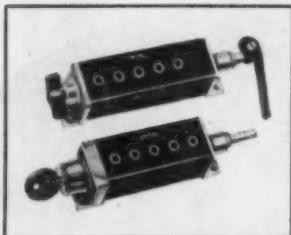
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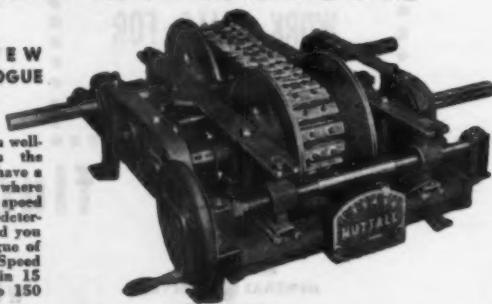
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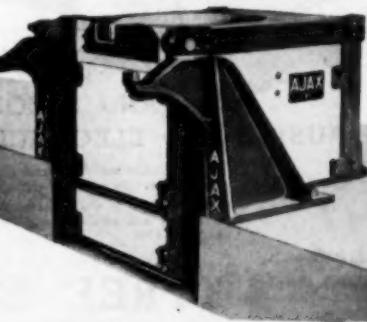
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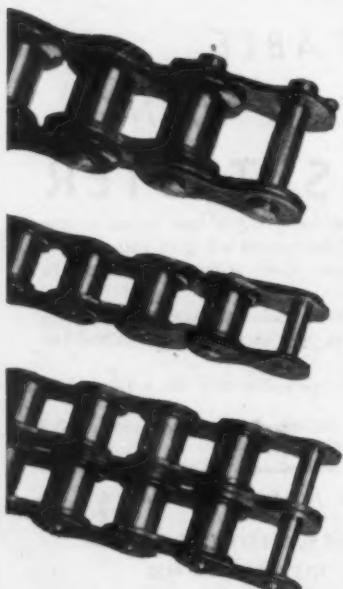
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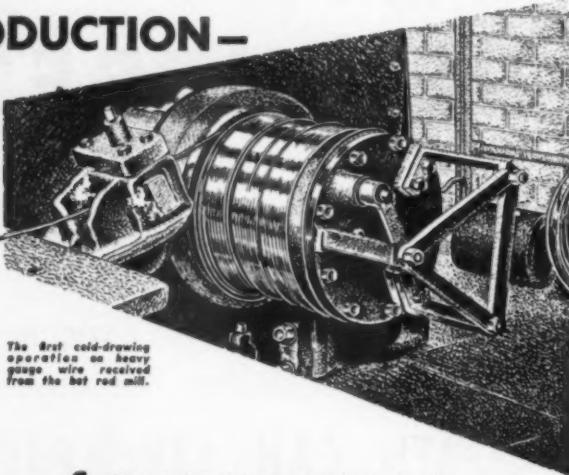
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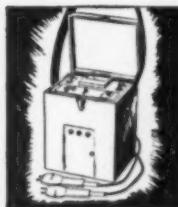
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PAGE NINETEEN

MARCH 10, 1951.



Productivity Increase

Must Emanate from Management - Employee Co-operation

Within recent weeks in the Australian industrial world the spotlight has been focussed on increased productivity: on higher individual output per individual worker. Two important, though differing, factors have been responsible for this interest. First, Australia's urgent need of increased production in every sphere. And second, the stimulating approach to the issue by Mr. Alvin Dodd, President of the American Management Association, at present visiting this country at the invitation of the Commonwealth Government and the Australian Institute of Management.

As this writing goes to press, Mr. Dodd has been here only about a week. Yet in that brief period he has literally vivified the management-employee co-operation question; has recounted graphically the new approach of American labour to the productivity issue; and has indicated the path Australia must tread if she is to reach the goal of her ambition.

Mr. Dodd records the fact that American industry has the highest productivity in the world, hastening to add that this is in no way due to long hours of work. "A new thought-pattern in industrial relationship in America," he declared, "has developed interest in a game of how to produce quicker, better, and cheaper. This has happened in the last twenty years—and especially during the war."

Part of this new thought-pattern has been an insistence on increased mechanisation. "Even an extreme Labour leader like John L. Lewis, the Coal Union boss," Mr. Dodd assures us, "encourages the adoption of every mechanical means to increase production. When coal production has increased accordingly, he feels justified in asking for more wages for his members."

A like spirit manifested itself in the Treaty of Detroit drawn up some months back by General Motors' Corporation and the United Automobile Workers' Union, said treaty declaring, inter alia: "The annual improvement factor provided herein recognises that a continuing improvement in the standard of living of employees depends upon technological progress, better tools, methods, processes, and equipment and a co-operative attitude on the part of all parties in such progress. It further recognises the principle that to produce more with the same amount of human effort is a sound economic and social objective."

Small wonder, therefore, that Mr. Dodd advocates a change of mentality on the part of both management and labour in this Commonwealth. "Union leaders here," he stresses, "should take their blinders off. They feel that management and labour should stick their tongues out

at each other. They feel if they get to know each other they might like each other." Turning to management's responsibility, he added: "Better working conditions, improved management techniques, and good teamwork can do much to improve output and lower prices."

Though invited by the Government of the Commonwealth and the Australian Institute of Management to confer with the industrialists of this nation on management problems, Mr. Dodd declared on his recent arrival in Sydney that he "had not come to tell Australian industrialists how to solve their problems. "But," he added, "Australian industrialists may be able to adopt something of what we have learned in America of methods which lead to greater production."

To this end, he advocated that Australian industrialists and union leaders should visit the United States and see for themselves how management and labour are co-operating. "Many of your union leaders who have been puzzled at the support which American union leaders have been giving to the production drive, may," he said, "learn a lot by studying our methods."

This certainly happened to the British Productivity teams which, some time back, visited a number of American factories. The deepest impression gained by the rayon team, for example, being "the way American workers work," the team expressing its amazement at the incessant striving for higher output per man at all levels of industry, from unskilled labour to management. Again, the steel founders reported: "Primarily, the team have been aware of a widespread productivity consciousness. There is more to this than mere production-consciousness. The emphasis in America seems to be far more on productivity—output per man—than on total output of plant, which is regarded, logically enough, as a corollary to high productivity. Productivity-consciousness is found among all grades of employees, from executives to shop level."

These are solid and stimulating facts, facts recording what is happening to management and labour in the world's two great industrial nations,

the United States and the United Kingdom. They are facts which cannot fail to stir even the most prosaic. Indeed, they are calculated to revolutionise management and labour thinking in this new country, just as it has been revolutionised in the older lands.

It would seem, indeed, that no greater service could be rendered to this Commonwealth at the present juncture than the despatch to the

United States of Australian Productivity Teams, teams which could see for themselves what is being accomplished. This committee could absorb the spirit permeating the industrial atmosphere, and on returning to these shores, could enkindle the spirit of practical co-operation, the spirit from which alone can emanate high productivity and high living standards.

Pithy Jottings of Industry and Industrialists

NEW FACTORY FOR ELECTRICAL CONTROL

Electrical Control and Engineering Ltd., of Camperdown, Sydney, recently took a controlling interest in National Control Equipment Pty. Ltd., manufacturers of electronic controls.

It is building new premises and installing new plant at Banks-town, N.S.W., for its heavy programme and special defence work.

ARBITRATION LECTURES.

The Adelaide Division of the Australian Institute of Management has arranged a course of six fortnightly lectures on "The History and Operation of Industrial Awards," the first of the series being given on the 7th inst. The lecturer is Mr. A. Goldsworthy, Deputy Registrar of the Commonwealth Arbitration Court in Adelaide, who will deal with: (1) The History of the Arbitration Systems; (2) the Commonwealth Conciliation and Arbitration Act; (3) the Arbitration Court—its functions and authority; (4) Conciliation Commissioners— their function, authority, and relation to the Arbitration Court; (5) Wage Fixation; (6) Basic Wage, margins, female rates, juniors and apprentices, casual and special rates; (7) Hours and conditions of work; (8) Common awards; and (9) The legal relation of employer and employee.

The series should be of interest to manufacturers throughout Australia, more especially those offi-

PROPOSED £10m. PLANT FOR AUSTRALIA.

It is reported from London that a £10m. plant to make sheet steel is planned at Port Kembla for Lysaght Works Pty. Ltd., a subsidiary of Guest, Keen and Nettlefolds Ltd., of London.

It is expected to begin producing in 1954 and make Australia independent of British sheet steel.

Announcing this, a daily press report says Guest, Keen and Nettlefolds said that the new sheet steel plant would link up with the continuous-strip steel mill being built at Port Kembla by B.H.P.

Funds for the project will come from money the Government is paying in compensation for nationalising the British steel industry.

VISIT ABROAD OF MR. F. T. PERRY.

The Hon. F. T. Perry, M.L.C., chairman of Perry Engineering Ltd., Adelaide, is at present making a combined business and pleasure tour of the United Kingdom and the Continent. Paying well-merited tribute to his services to the Australian engineering world, Mr. A. J. Gibb, President of the South Australian Metal Industries' Association, said at a farewell gathering: "Mr. Perry has been the mainstay of the metal industries group in South Australia for the best part of twenty years. He was mainly responsible for the formation of the Australian Metal Industries' Association, and was foundation president of both Federal and State associations."

PROF. COPLAND ON PRODUCTION.

Addressing delegates to the Top Management Conference held recently at the University of Sydney under the auspices of the Australian Institute of Management, Professor Copland, vice-chancellor of the Australian National University, deprecated the low increase in Australian productivity, especially by comparison with nations abroad. "The United States, with technical efficiency, in," he said, "doubling its output every fifteen years. Latest figures from the United Kingdom show an overall increase in output of about five per cent. a year, which is a remarkable figure. In Australia before the war the annual

increase was three per cent., yet since the war it has been less than one per cent." He ascribed this unsatisfactory condition of affairs to the inadequate basis on which Australian industry operates—shortage of steel, coal and power, and gross inefficiency of the transport system.

AUSTRALIA LAGS IN MECHANISATION.

Mr. R. G. Casey, Minister for National Development, commenting on a report issued by the Snowy River Committee emphasising that as progress is made with the Snowy Mountains Hydro-Electric Project so must there be a corresponding expansion of steam generating power in New South Wales and Victoria, said: "The developed power available in Australia to-day is only about 34 horse-power per person compared with 134 horse power per person in Canada. It is estimated that in the next ten years the demand for developed power in New South Wales will increase from 1,099,000 horse-power to nearly two million, and in Victoria from 675,000 to 1,072,000."

COMPANY PAYS BONUSES TO STAFF.

P. J. Flirth and Company Ltd., cardboard box making firm, of Redfern, Sydney, recently distributed a total of £10,000 in bonuses among 244 employees.

The secretary of the company (Mr. V. G. Lambert) said that in the past four years over £27,000 had been paid in bonuses. "An elected staff committee works out how much each employee receives," Mr. Lambert said. "It applies a formula which takes into account efficiency, punctuality and loyalty. Nearly everybody will benefit—office staff, cleaners, process workers and truck drivers."

Individual employees will get up to £80 (for a male machinist) and £55 (for a female).

NO PLANS FOR TINPLATE.

A spokesman of Lysaght Works Pty. Ltd. said the other day that his Company would not be associated with plans for the future production in Australia of tinplate. The company's plans for expansion were concerned only with increasing production of sheet steel.

He denied an Australian Associated Press cabled message, published in the daily press, that plant being imported by the company would produce tinplate.

DEATH OF A.G.E. CHAIRMAN.

The death occurred in Sydney last week of Mr. S. B. Cox, chairman of directors of the Australian General Electric Co. Pty. Ltd.

Mr. Cox joined the company 42 years ago, became a director in 1930, and chairman of directors in 1949.

He was widely known in Australian business circles.

POOR PLANNING HITS PRODUCTION.

Mr. Baron D. Schneider, Director of the Training Within Industry Programme of the Australian Institute of Management, recently expressed the opinion that Australian industry is losing countless production hours through poor management, planning, and production procedures. Mr. Schneider, who was addressing the Federal Institute of Accountants, went on to declare that management is primarily to blame for the hidden costs caused by inadequate instruction to employees, inefficient procedures, and preventable industrial accidents. "Management," he declared, "often blames workers for mistakes and lack of enthusiasm for the job, whereas the fault is generally inefficient and careless control. Accidents are one of industry's biggest hidden costs. Indirectly their total price is about three to four times the direct productive loss. Most can be avoided by proper planning."

INCENTIVES AID BRITISH INDUSTRY.

An interesting and important visitor to Australia at the present time is Miss E. Buckley Sharp, O.B.E., deputy director of the United Kingdom Institute of Personnel Management. Miss Sharp has been actively associated with this department of industry throughout Britain's war and post-war years. She has, accordingly, been an interested witness of the production feats of these two periods. She lays particular emphasis on one specific aid to Britain's increased production— incentive systems. "Incentive schemes," she said recently, "are playing their part in the United Kingdom productive drive. They are encouraged by the Trade Union Congress and are now fairly widespread throughout the manufacturing industries."

Turning to the broad question of industrial relationships, she expressed the opinion that the

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first essential to improvement in this regard is the breaking down of the atmosphere of suspicion between management and employee. "The employer," she added, "must prove his consistency. He must overcome the feeling by workers that his interest in better relations is not a temporary one while full employment exists, but is in the common interest of both parties."

INDUSTRIALIST URGES RISE IN STEEL PRICES.

Mr. V. Christie, managing director of Webb Industries Ltd., Kerang, Victoria, who recently returned from a trip abroad, ventured a prediction that the steel shortage will wreck development in Australia unless action is taken by the Commonwealth Government. "I suggest Australian steel production can be stimulated if it is removed from control and the price raised more in keeping with world levels. This action would make it possible to pay

higher wages in coal mines and steel works and attract more labour and capital. A substantial increase in the price of Australian steel would not greatly affect the internal price structure because many projects now use mostly imported steel."

The "Manufacturer" doubts the wisdom of Mr. Christie's contention. Indeed, it is of opinion that any such substantial rise in steel prices and a continued spiral rise in wages for coal miners, as he advocates, would have serious repercussions throughout the whole of the engineering and manufacturing industries.

B.H.P. PRODUCTION REPORT.

Restriction of the carriage of goods by rail will hit B.H.P. production, already down to 60 per cent, because of coal and shipping shortages.

The restrictions will also reduce to a comparatively modest tonnage the finished iron and steel which could now be delivered by

the N.S.W. railways to customers throughout Australia.

Commenting on this position, the manager of the B.H.P. steelworks, Mr. Keith Butler, says if this position obtained for very long it must affect employment in many engineering shops and hinder the progress of essential works.

Mr. Butler said the steel industry in Newcastle since Christmas had not averaged 60 per cent. in a nation which needed steel so badly.

WORLD'S STEEL OUTPUT RISES SHARPLY.

According to the United Nations Statistical Year Book, world production of steel, excluding Russia and China, amounted in 1949 to 148,960,000 tons, by comparison with 95,188,000 tons in 1930. During the same period American output increased by 71 per cent, Britain's output being more than doubled. To this country, the most important fact recorded is

that the largest percentage increase occurred here, where the figures were 320,000 tons in 1930 and 1,183,000 tons in 1949.

BUSINESS APPOINTMENTS.

Mr. J. F. Holmes, sales manager, and Mr. D. G. Davidson, works manager, have been appointed directors of Goodlass Wall and Co. Pty. Ltd.

Mr. R. Bannister, sales manager, has been appointed a director of Alexander Ferguson Pty. Ltd.

TEXTILE MAN VISITING AUSTRALIA.

Mr. D. Rawlinson, managing director of Lustre Fibres Ltd., of Coventry, England, is on a short visit to Australia. Mr. Rawlinson's company supplies over 40 per cent. of Australia's imports of rayon yarn. Courtaulds (Australia) Ltd. have recently been appointed Australian distributing agents for Lustre Fibres Ltd.

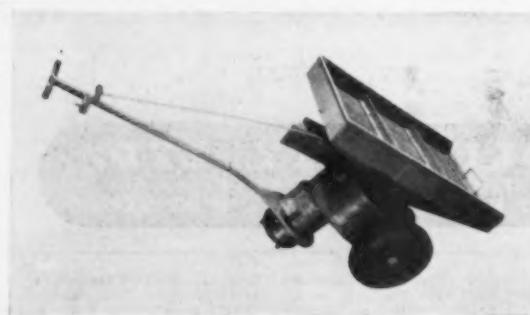
Our editorial representatives in each State makes regular calls on manufacturers, but if you wish to see some particular phase of your business given publicity, communications immediately with the Editor, or he will arrange for a representative to call.



Sand Conditioning Unit Makes It Easier Adjuncts to the Foundry

A new "sand boy" or a portable sand conditioning unit, has made its appearance on the market and has already met with widespread approval in foundries. It is primarily designed to take the sand to the operators instead of the operator going to the sand-heap. But its function is, of course, to sieve and condition foundry sand to that requisite

into a mixing chamber. There it is churned by double-faced blades that thoroughly mixes and re-bonds it. It is carried to a chute and the unit can be so regulated the sand may be discharged gently to a predetermined spot near the machine or thrown some distance away. That just depends on where the moulding station may be. It is powered by a 2-H.P.



New "Sand Boy" or Sand Conditioning Unit made by Warill & Co. Pty. Ltd., of Melbourne.

state of suitability necessary for good production of castings. The new unit prepares the sand for mixing, re-bonding, blending, aerating and cooling.

In normal foundry practice it is customary to move about 70 to 100 tons of material to produce one ton of casting and this useful machine helps a long way in obviating some of the drudgery as well as providing an efficient way of conditioning the sand.

The new unit is a simple but highly efficient machine. It is mounted on pneumatic wheels that give it an easy passage over rough or uneven factory floors. The sand is shovelled on to it and, after being treated by a sieve for the removal and segregation of lumps, core and gaggers, passes

totally enclosed motor, specially designed for the job. The drive to the mixing unit is by machine generated helical spur gearing. The sifting screen is operated by crank mechanism. The unit can be put into instant operating by the simple process of plugging in a flexible lead to the nearest power plug. It has, too, the added advantage, of being able to produce conditioned sand which may be used again.

The new unit is made at the South Melbourne workshops of Warill & Co. Pty. Ltd., of 512 Little Collins Street, Melbourne. This firm has a wide and enviable reputation as makers and designers of equipment for foundries. It has discovered many uses for equipment to overcome

the bug-bear of heavy industry—man-handling of material. It has made a portable ladle that does away with much of the laborious work of muscle. This ladle is wheeled about the foundry by one man, something after the fashion of a perambulator. By its use, it is estimated one man can easily shift enough metal comfortably that two or three would stagger with.

Ladies and pouring equipment is

a speciality with the firm. As in the fields of melting, moulding, fettling and sand conditioning, so is the accent on pouring devices. Barge and crane ladles, mixing ladles, buggy and hand types are all made by the firm and cover an extremely wide range over a full standard size. The company prides itself on the fact that it can—and has—made many devices beyond and outside its normal scope of manufacturing facilities.

Heat With No Blackouts

Kerosene Heating Unit Useful for Variety of Industrial Jobs

Cheap, quick heat without fear of blackouts or rationing. Sounds unlikely, but the answer is—Kerosene. A pressure jet thermal unit using lighting kerosene for fuel has been developed for industrial heating purposes by Robincraft Mechanical & Electrical Manufacturing Engineers, 88-70 Henderson Road, Alexandria, N.S.W.

The Robincraft heating unit works on a similar principle to the usual household pressure stove, the simplest example of which is the familiar primus stove. It consists of a tank (about the size of a four gallon petrol can) constructed of 14 gauge mild steel, pressure welded. The pump plunger works up and down by the pump handle projecting through the top of the drum. A pressure gauge and filler cap are also at the top. The tank diameter is 9½ inches with the unit standing 14 in. high. A flexible copper lead 6 ft. long carries the gas from the tank to the burner head, which is a small unit 5½ inches high and about the size of a saucer.

The burner head is placed under the boiler or whatever receptacle it is desired to heat. The flame is controlled by a valve on the storage unit. The tank has a non-return air valve for safety, and the tank operates under 5 to 7½ lbs. pressure.

The unit is readily portable, a handle being provided at the top of the storage tank for carrying from one place to another.

Controlled tests of the unit were

made in Queensland by Crouch & Connah Pty. Ltd., 40 Mackerston Street, Brisbane, under the auspices of Vacuum Oil Co., and the following results were reported to the makers:

"A standard 12 gallon fuel (wood) wash boiler filled with cold water was brought to the boil in exactly 15 minutes. Fuel used, one pint of kerosene, cost 4d. The lamp took two minutes to reach generating temperature. The same copper was stoked with wood and was kept stoked to the limit for the full burning period and took 62 minutes for the 12 gallons of water to reach boiling point. The same day, at a time when the gas pressure was at the full, a standard 12 gallon gas water boiler took 32 minutes to boil."

During the big coal strike of 1949 many Robincraft units were distributed throughout a variety of industries, and Mr. Bernard Robins who developed the unit, estimates that at least 5,000 persons in N.S.W. were saved from unemployment because of the use of them.

The units are in use by dry cleaners, clothing manufacturers and pressers for the heating of steam boilers; by roofing specialists for the heating of bitumen, cafes, confectioners and many others. One firm, for example, has adapted it to provide the heat for its blast drying furnace. This operates at a 140 degrees temperature (dry air) and dries the ink on printed metal.

(Turn to page 24.)

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(Continued from page 22.)
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Produce Co. Pty. Ltd., 181 Clarence Street, Sydney.

The heating unit has been patented. Commonwealth Registered Patent No. being 131,730.

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Criticism, of course, can be either complimentary or disparaging, and levelled in either vein can be of constructive value providing it presents a true assessment of existing fact and is supplemented, when necessary, by the suggestion of practical remedies.

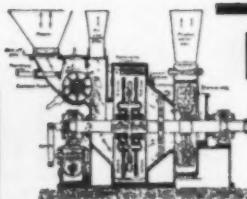
Broad generalities in criticism may easily, though quite unintentionally create wrong impressions.

As a case in point, an article was recently published in "The Times Review of Industry" dealing with the Limitations of Overseas

Agencies, and this was reproduced in the February 3rd issue of "The Australasian Manufacturer."

It would undoubtedly seem that the author of this article must have encountered some weaknesses and inefficiencies in the service afforded by manufacturers' agents, especially in the marketing and servicing of machinery, and while these observations may have been made with the hope of improving the state of affairs as he saw it at the time, he painted a gloomy picture with a palette of his own choosing and one unhappily devoid of bright colours.

His resignedly pessimistic outlook was, no doubt, occasioned by certain experiences of some over-



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seas manufacturers in certain of their dealings with their personally selected agents.

One paragraph of this contentious article reads—"In any difficulty or complaint about the working of a machine, the intervention of an agent is no blessing, for there is no chance of someone going to the user's plant, taking off his coat, and showing what should be done. On the contrary, the manufacturer usually finds that he now has two antagonists instead of one."

This sweeping comment must have been inspired by some instances brought to the attention of the one who expressed it. It can, however, be regarded by anyone with a wide knowledge of international machinery distribution as doing an injustice and a disservice to many highly reputable and efficient organisations who know the real meaning of service and practice it to a commendable degree in merchandising the machinery and equipment made by their overseas principals.

This point is not just airy made. It can be readily substantiated by departing from sweeping general observations and citing an actual case.

Here in Australia there are several machinery merchandising houses that afford very comprehensive service to support and stimulate the selling of machinery made both in Australia and in other parts of the world. To take a specific example, Gilbert Lodge & Co. Ltd. are the Commonwealth representatives for an imposing list of some of the world's best known machinery and machine tool manufacturing organisations. They have held their agencies over a long period of years and have consistently added new ones to their catalogue. This in itself is undeniable evidence of the fact that they do their job well and to

the complete and continued satisfaction of their principals.

On the service side, it may be mentioned that Gilbert Lodge & Co. Ltd. have their own offices in all States. They retain trained engineers at all offices, each specialising in certain of the many different machines the company handles. It has long been their practice for executives and technical members of their staff to be sent overseas to gain practical experience in the factories of their principals. Many of these principals have also sent technicians to Australia to study local requirements and problems and stimulate that vital service liaison with the factory. The trained personnel thus created within the Gilbert Lodge organisation is always at the service of machinery and machine tool users throughout the Commonwealth and in New Zealand—and it is service greatly appreciated in industrial circles. It covers not only sound advice regarding the selection of appropriate machinery for any purpose and its proper installation but also prompt, personal attention in the event of operating difficulties being encountered.

It can be stated as a fact that, should any such difficulty arise, a trained Gilbert Lodge technician will be sent promptly to the plant concerned. If the occasion demands, he will certainly "take his coat off" (we have actually seen this done on more than one occasion—Editor), and he won't put it on again until the equipment is operating to the complete satisfaction of everyone concerned, especially himself. He will ensure, moreover, that the operator is made fully conversant with the cause of the difficulty that occurred, and advise him how to avoid such a production hold up in the future.

This is service in the merchandising of machinery. It is service of a commendably high order. It is service that can be obtained, and if there are cases where overseas manufacturers appoint inefficient or incompetent organisations to represent them in export markets, who in a basic analysis of the thing, is to blame?

Shaped in Wood

Pattern Making Service for Moulders

There are many specialised operations in the process of manufacture which require a high degree of tradesmanship. Not the least of the employer's problems is the finding of labour with the necessary skill to perform these tasks. Apprentices are becoming harder to obtain, as more and more young lads are attracted either by "glamour" jobs, or unskilled work where the immediate returns are high.

This forces many firms to send out work to small factories which specialise in a particular service or work. The manufacturer finds that in this way he can rely on getting a constant standard of work with no worries about obtaining materials or skilled labour. Often the arrangement has proved more economical, even where the larger concern would have had enough work to justify the establishment of its own department.

One of the firms which provides a specialised service to manufacturers is Austral Quick Service Pattern Company, 11 Wyndham Street, Alexandria, N.S.W. The firm specialises in making the wooden patterns as used by the moulding trade. There is probably no more important stage in the making of cast products than the fashioning of the original pattern which is used to hollow out the sand before the molten metal is poured in. It is a trade which is one of the most technical of the woodworking crafts.

The tradesmen employed by Mr. Vincent, the proprietor of the factory, are highly skilled, turning out patterns ranging from those for tiny cast fittings to one for a huge gear wheel 6 ft. in diameter.

Cedar and milky pine are the timbers most favoured because they are soft and easily worked. They need to be, because the wood is asked to assume shapes which are not complementary to it. When the article for which the pattern was being made was designed it was drawn to be made of metal with shapes and dimensions quite different from what it would have if it were to have been fashioned from wood. This requires a great deal of careful, accurate handwork.

The proprietor of Austral Quick Pattern Service is confident that he can offer a better and quicker service even to factories which have sufficient work to justify establishing a workshop of their own.



The story of Balfour is the story of British Gas...

When Britain's first Gas Company was established in 1812 in Pall Mall — the first thoroughfare to be lit by gas — Henry Balfour & Co. Ltd., Gas Engineers and Ironfounders, had already been in existence for two years. It is no wonder, then, that many of the achievements of the British Gas Industry are achievements of the Balfour Organisation, too, for development has taken place side by side.

Thus, it is to-day that the Balfour Organisation can offer an unparalleled service for planning,

manufacturing and installing complete plant for the production and purification of gas, and for the recovery of by-products. Installations in most countries of the world testify to the breadth of experience that belongs to the Company as a whole. With this cumulative knowledge to support their own experience the Company's engineers are confident of dealing successfully with any problem of gas engineering technique that can be put before them.

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B.I.



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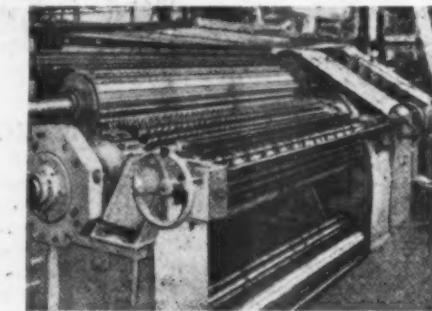
Direct Weaving Wire Netting Machine

Machines for making wire netting were first designed in Britain rather more than a century ago, and the equipment at present in general use at home and abroad retains all the basic principles of these early efforts. During this long period many improvements have, of course, been made but they have mostly been concerned with the standard of flatness, uniformity of mesh, and speed of production of the finished netting. With plant of this older type it is not possible to weave the netting direct from the standard coils of wire as received from the mills. A preliminary stage, which consists of winding the wire into spiral coils and into bobbins in approximately equal quantities, is necessary. These essential processes are expensive in time and wages and account for about half of the production labour cost.

The spiral coils are inserted into tubes which are arranged throughout the length of the weaving machines and the bobbins take their place in nests at the back of the machine. The diameter of the coil tubes is obviously limited by the size of the particular mesh being made, as the spacing of the tubes is related to the mesh size. For instance, in netting of, say, 1 in. mesh, the outside diameter of the tube cannot exceed 1 in. It follows, therefore, that the size of the wire coil must be kept within this dimension and that the replenishing of coils as they are consumed is a factor of some importance, as the machine is not producing during this operation. This point will be readily appreciated when it is remembered that in making netting of 1 in. mesh, one tube is required for every inch of its width, and in netting 6 ft. wide the number of tubes would be approximately 72.

A machine employing entirely new principles has recently been installed in the wire netting sec-

tion at a British factory. Wire netting has been manufactured by this firm since 1860, when it was hand woven, and the first weaving machine was not built by the company until 1869. The high



A view of the machine for making wire netting, in which part of the mechanism for forming the familiar netting pattern is visible.

quality of this concern's netting and its many other products is known in every market of the world. The new machine, designed and made in the United States, is believed to be the only one of its kind in Europe. It has aroused much interest in the netting trade, and has created a great impression because of its unique design and outstanding performance. An important feature of the machine is that it allows the netting to be woven direct from the large standard size coils of wire as normally supplied from the wire mills and renders unnecessary the intermediate operations of winding small coils and bobbins, including, of course, the undesirable operation, inherent in the old method, of joining together the small coils.

The large coils of wire are placed without previous preparation on specially designed "pay-off" reels, which are mounted on ball-bearing castors for ease in placing into position and for removal for reloading when exhausted. No production time is lost in this operation, as the necessary connection between the end of the spent coil and that of the

of 72 in can be produced at this rate of 50 square yards a minute. This rate of output is made possible by the continuous rotary motion of the machine. Interruption of the weaving process for the removal of completed rolls is obviated by inclusion in the plant of a "looping bin," which stores, in the form of loops, the netting produced during the time occupied in the winding of rolls and their removal from the winding mandrel.

Any fault encountered in the winding of the wire at the mills is immediately signalled to the operator by means of an electrical apparatus which operates red warning lights so placed that they indicate the exact location of the fault, and simultaneously stop the machine. It cannot then be restarted until the bent or distorted wire has been rectified and any other necessary adjustment made. This arrangement has the obvious advantages of preventing damage to the netting already in the machine and safeguards the high quality of the finished product.

Many advantages accrue to the worker from such a machine, one of the most obvious being its quietness in operation in distinct contrast to the reciprocating type of machine commonly in use. The many automatic devices incorporated also relieve the operator of much of the strain which would otherwise be involved in running in a high production machine of this sort.

The length of netting contained in the rolls is automatically controlled and the mechanism can easily be adjusted to indicate any desired length of roll. Normally for the home trade this measure is 50 yards, but 40 or 50 metres are often specified for export. Cutting off to the required length is accomplished by means of a special electric shear.

The machine is fitted with hydraulically operated rolls, which, in addition to rolling the netting loosely, as is usual for the home market, can also be set by the simple operation of a valve, for compressing the rolls for shipment in order to save expensive

new one is accomplished while the machine is still in operation. Netting made in the new machine may be distinguished by the unusual "twist" in the mesh formation. The twisting operation is performed by high-precision twister-pinsions, of which the machine contains over a thousand. Pairs of wires enter the twisters, which are rotated by means of cam-operated racks imparting right and left-hand twists. This method increases the rigidity of the netting and forms a compact closely woven foundation for the subsequent galvanizing process.

The output obtained is astonishingly high, for the machine is capable of making completely two 50-yard rolls of netting 36 in. wide by 2 in. mesh every minute. Any other widths of netting, or any two widths, not exceeding a total

shipping space. Compressing for export has previously involved a separate operation. At present the machine is engaged in the production of 2 in. mesh netting, which is the size for which there is by far the larger demand. The high rate of production which is attainable has the advantage of enabling the prompt execution of orders for home and abroad, and reduces the necessity of holding large stocks. [2748].

Thickness Gauging of Metal Foils

The latest developments in the use of radioactive isotopes produced in the atomic pile have been turned to account in measuring and controlling the thickness of metal foils during manufacture.



A typical industrial electronic unit.

Broadly, the principle is that radiation is stopped to some degree by a material such as aluminum, copper, etc., in the path.

The stopping power is roughly proportional to the weight of material present, and if means are provided to measure the change in radiation falling on a detector this can be arranged to indicate accurately the actual weight per unit area of the interposed material.

The latest gauge for metal foil consists of a source of radioactivity in a safety container which is fixed on one side of the foil, and an inch or two away from it, with an ionization chamber fixed opposite to it a similar distance on the other side of the foil. The actual position of the foil between the source and chamber is not critical and considerable movement of the foil up and down between the two can be tolerated.

There is an electrical connection from the ionization chamber to the electronic part of the gauge, the power for operating which is supplied from the a.c. mains.

The speed at which the foil passes through the gauge does not affect the reading and the electrical output of the gauge is sufficient to operate recording instruments or controllers. [2748].

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SWIFT NEWSLETTER No. 82

"First in Silicones— foremost in Silicon Chemicals"

Dow Corning Corporation is justifiably proud of its pre-eminent position in the field of silicon chemicals: but, in spite of the widespread application of DC Silicones, industry has only scratched the surface of their potential uses. New and interesting applications are being developed almost daily, and their outstanding properties can be of service to you.

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DC Mould Release Fluid, Emulsion and Compound keep moulds clean longer.

DC 44 lubricated bearings run 3,820 hours at 250° F.

DC Resins improve electrical insulation and heat-resistant surface coatings.

"Silastic" gaskets are used for the most powerful aircraft engine ever built.

These are but a few of the fields in which DC Silicones are used to-day, but they provide much food for thought. "New Engineering Materials," a general catalogue published by our principals, will supply further details, and full technical information is available upon request.

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Electrical Rectifier With Electronic Action

Conversion of alternating electrical current to direct current has become increasingly necessary in modern industry, and to meet this growing need a British firm has developed and improved a rectifier which is purely electronic in action. This method eliminates vibration and mechanical wear, and solves many maintenance problems.

The new instrument is a development of the firm's well-known glass bulb rectifier, and comprises the normal transformer and rectifier together with the control gear. It enables the armature voltage and field current of shunt connected direct current motors to be varied either independently or

together to give smooth speed variation over ranges of up to 50:1 or greater if required.

The rectifiers are made for operation on any alternating current supply in types to suit most industrial variable speed drives. Each type is designed for the particular application and the Veltrol operates with any standard direct current motor, thereby ensuring the highest overall efficiency both in operation and maintenance. Nothing is consumed within the bulb, which continues to operate indefinitely and, as no filaments are used, a warming up period is not necessary so that the bulb can be switched immediately on to the load. [2743].

Pump for Dealing with Liquids Containing Solids

Handling liquids containing solids, particularly of an abrasive nature, by means of a centrifugal pump is a problem of unusual difficulty for which the conventional water pump is quite unsuitable.

For its practical solution, two essential conditions must be fulfilled: the pumping parts must have a reasonable life and be readily replaceable and the working fluid must be prevented from entering the gland or bearing of the pump.

A pump, designed to satisfy these requirements, has an impeller of novel design, which consists of a disc carrying both working and auxiliary vanes, the diameter of the latter being much in excess of the former.

By this method the manometric head set up by the auxiliary vanes exceeds that of the pumping vanes by an amount which depends on the difference in the square of the tip speeds. This results in a substantial lowering of the pressure at the gland com-

pared with that at the pump inlet.

As a result a head of eight feet may be imposed on the inlet of an operating pump with the gland still remaining under suction. This prevents any tendency for fluid to be forced into the stuffing box. The suction at the gland decreases as the discharge head increases, but suction is maintained even when the pump is fully throttled. [2744].

Smaller Portable Sound Level Meter

The initial step to the control and reduction of noise in factories, public buildings and offices is its measurement, and for this there is need for a simple, easily portable, sound level meter. A new sound level meter manufactured

Longer Life with a

**"KLEEN-CUT"
GUILLOTINE**

The KLEEN-CUT 6ft. Guillotine will give you better performance than many machines of a much greater cost. The sturdy all-steel construction gives you unbreakable frames and greater rigidity for the same weight. Long life is assured by the use of replaceable brass bushes and high tensile nuts and bolts wherever necessary. This sturdy machine has 18% Tungsten laminated high speed steel cutting knives. You will speed your sheet metal work when you have a KLEEN CUT Guillotine in your plant.

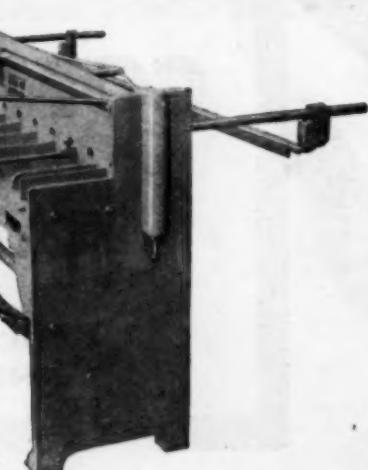
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by a London firm incorporates such careful design, together with the use of miniature components, that it has been possible to reduce the usual physical size and weight by approximately one half, inclusive of the self-contained batteries and without any deterioration in the meter's performance.

The weight of the instrument complete with batteries is only ten pounds, and this self-contained portable instrument gives a direct measurement of sound level over the full audible range. The amplifier sub-assembly is mounted in a spring suspension to provide freedom from microphone vibration. No coils or transformer are used in the circuit, thus minimising error due to magnetic pick-up.

The instrument can be used for vibration measurements in the range 25-1,000 cycles per second by replacing the microphone with

a special pick-up and adapter unit. (2727).

**Fire Extinguisher
Made From Dry
Chemical Powder**

Most fire extinguishers work on the foam principle, and project a blanket of foam which seals off the fire. With this type of fire extinguisher it takes about 30 to 40 seconds to put out a blaze, and it is essential for the operator to stand close to the fire for effective action.

A new type of extinguisher works on a different principle from former types. While still consisting of a carbon-dioxide gas cylinder, the chief material is a

dry chemical powder. On pressing the trigger control valve the gas is released and provides the necessary pressure to expel the fire extinguishing powder—at the same time acting as a supplementary fire fighting agent.

The dry chemical cuts off the

oxygen, while the spraying power caused by the compressed gas "knocks out" the fire in only a few seconds. This method is highly efficient in extinguishing fires of oils, spirits, alcohol, solvents, wax, paints and similar materials. (2745).

**New Plate-edge Preparation
Device**

A new plate-edge preparation device has been designed to increase production and ensure clean-cut, accurate preparation of plate edges. Its ability to cut a

single or double bevel accurately, with or without a land, recommends it especially for use in shops or factories which do any amount of steel fabrication work.

PRODOMEETS

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DAREX AEA AT WORK

This Micro-Photo shows that when Darex AEA (Air Entraining Agent) is added to the concrete mix, CONTROLLED AIR (3% to 5%) in the form of minute bubbles act as tiny ball-bearings to lubricate and plasticise the mix. Consequently, placing and finishing is easier and faster than ordinary concrete.

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Because as little as 1 to 1½ fluid ounces is required per bag cement, the low cost of Darex AEA is more than balanced by substantial savings in man-hours, due to elimination of surface water, gravel pockets, bleeding, sand streaking, etc. Darex AEA is a harmless, neutral, water soluble compound that comes ready to use.

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The new plate-edge preparation device which employs a spring-balanced, free floating carriage and castor-wheel assembly to permit bevel cutting over plate undulations while maintaining a constant tip-to-work distance, may be mounted on any gas cutting machine equipped with a 3 in. square torch bar.

Torches may be individually positioned vertically or laterally without changing the bevel angle. Fuel and preheat pressures are initially set with individual torch valves, and once set, the master valve controls turning-on and shutting-off gas supply without disturbing settings of the individual torch valves. [2717]

Modified 100 in.

Gear Shaper

The 100 in. gear shaping machine illustrated below has been modified for cutting helical as well as spur gears. Capacity for external gears is from 28 in. to 100 in. pitch diameter, and for internal gears from 46 in. to 100 in. pitch diameter with 112 in. outside diameter.

The machine will cut two pitch spur gears and four pitch helical gears with helix angle up to 35 deg. and 3 in. face width, using up to 8 in. diameter gear-shaper cutters.



Modified 100 in. gear shaping machine now cuts helical as well as spur gears, using up to 8 in. diam. cutters.

Operators of the machine are recommended to consult the makers where high-ratio mating external gears or high-ratio mating external and internal gears are to be cut, because of interference conditions encountered with high ratios. The same precaution is also advised when the number of teeth in an external gear closely approaches the number of teeth in a mating internal gear, as similar interference conditions may exist.

Overall dimensions of the 100 in. machine are 10 ft. 8 in. in length, 9 ft. 4 in. in width, and 9 ft. 7 in. in height. Approximate net weight with motors and electrical equipment is 18 tons. [2739].

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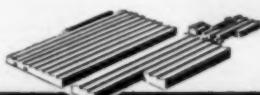
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Precision Lathes Earn World Reputation

25 years of important manufacturing development

In the present day's tremendous industrial development with factories becoming bigger and bigger, it is sometimes forgotten how much Australia's growth owes to the enterprise of individual craftsmen. The story behind many names which are now so prominent in the Commonwealth's industrial field, is of the struggle of courageous men toiling in small workshops.

Such a story in the history of the Nuttall organization, which, in 1950, celebrated the 25th anniversary of its beginning—the erection of a small shed in a big paddock at Primrose Avenue, Rosebery, N.S.W.: Mr. R. Nuttall had gone into business making lift-trucks and clutches.

Mr. Nuttall, Senior, is now the Chief Director of a group containing three companies. His elder son, Mr. R. H. Nuttall, is Director and General Manager of the main Manufacturing Co.—Nuttall Engineering Pty. Ltd., The Foundry-Cast Products Pty. Ltd., (which produces all castings for the parent company, as well as doing outside work), is controlled by Mr. W. Nuttall, who is also Director and Production Manager of Nuttall Engineering.

The distributing company is Modern Tools Pty. Ltd., with Mr. W. Clegg as Sales Director and Sales Manager of Nuttall Engineering Pty. Ltd.

DURING World War 2 the Nuttall company's extensive knowledge and experience of clutch manufacture was put to good use in the making of clutches for cruiser tanks for the Ministry of Munitions.

To-day's range of clutches includes disc-type friction clutches—Pulley Mounting type—Coupling

The Nuttall Paper Box machinery includes a 126" Rotary Slotted which takes corrugated container blanks, trimmed and scored the long way, and trims, scores and slots at speeds from 40 to 120 per minute. Also a vertical slotted for solid fibre or corrugated board; a duplex and triplex slitter and scorer with two and three complete

lathes are their sound design, rigidity, sturdiness, balanced strength, and simplicity and convenience of operation.

The production of these machine tools was stimulated by the recent war. About two years prior to the commencement of hostilities the firm was planning the production of a 6" lathe, feeling that there

expanded to meet the national emergency.

Production was stepped up to a maximum with hundreds made during the war finding their way all over Australia into all types of production workshops and tool-rooms engaged on munitions work. The contribution to the war effort made by the suppliers of such a



Mr. R. H. Nuttall, Director and General Manager of Nuttall Engineering Pty. Ltd.

type—a twin clutch for two speeds or reversing; and a slipping clutch for protection of machines against sudden overloads—in a range of sizes from 1/2 H.P. to 300 H.P., and for any speed. In fact it can be claimed that they manufacture the largest and most varied range of industrial clutches in the South-eastern Hemisphere.

The companion transmission product—the Nuttall variable speed transmission is a compact and self-contained unit designed to provide adjustable speed regulation for any type of machine, conveyor or other industrial purpose. Speed may be varied and determined to a fraction of a revolution per minute. There is a variety of models and sizes for all purposes.

sets of slitting and scoring heads respectively; a heavy bar bender, a partition slotted, a guier and many others.

This equipment, however, forms only a small part of the factory's present output, of which the major portion consists of precision lathes possessing a world-wide reputation for quality of workmanship. Basic reasons for the success of Nuttall

was a need for such equipment to be made in Australia.

By the time war came an 8" and 12" lathe were in production as well and were being well received by the trade. Hence the firm was able to respond to the Government's call for Australian-made machine tools. None were coming in to the country, yet the demand had never been greater as all industry ex-



Mr. R. Nuttall, Sr.



Mr. W. Nuttall, Director and Production Manager of Nuttall Engineering Pty. Ltd.

vital and productive tool as a precision lathe would be difficult to estimate. Economic quantity production was achieved by sacrificing variety and concentrating on the production of one type of lathe only, in a range of sizes with the possibility of minor variations to suit specific conditions.

Quantity production methods are, however, applied only as far as they do not impair the quality of the product.

After the war the demand showed no sign of easing and now Nuttall lathes are competing successfully with makes from all over the world. The makers say that they are confident they lead the field in their own price-class in design and precision of workmanship. Their specially trained men are required to work to fine limits of accuracy and the Management proudly say that for skill in Machine Tool

building their men are second to none.

Enquiries for Nuttall lathes have been received from India, Ceylon, many of the Eastern countries and even from England and the Continent.

Continual research is carried out by Nuttall's planning and designing department. Mr. Nuttall Senior still takes a keen personal interest in research and new projects.

When plans are complete a unit is constructed and put into use in the Nuttall plant. It is used in the process of production and its efficiency observed and refinements worked out over a period. In this way the plant's designing engineers have been able to keep pace successfully with overseas trends.

The latest model Nuttall lathes feature the most up-to-date developments in design, including the all-gear head.

THE ALL-GEARED 6½" CENTRE LATHE

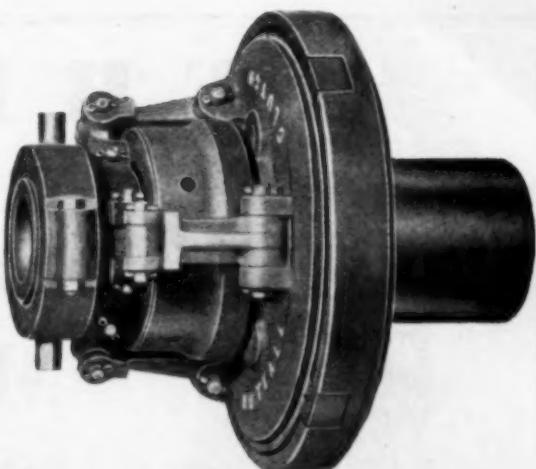
This Centre Lathe for Surfacing, Sliding, Screw-Cutting has the all-gear head similar in design and specification to the 6½".

A double wall box apron supports all-gear shafts. A safety cutout which trips the feed drive drop worm, prevents accidental overrun of the saddle, and can be set to stop the saddle at any point. Interlocking cams are provided to stop the simultaneous engagement of cross or sliding feed and clamp nut.

There are six models of the 6½" available admitting 48", 72" and 96" between centres. Twelve spindle speeds are provided from 13 to 620 r.p.m.

Another model available is the 6½" centre 20" swing surfacing and boring lathe.

All models are built to close tolerances as laid down by Prof. Dr. Schlesinger. Special motors can



The "Nuttall" Friction Clutch.



The original factory premises of Mr. R. Nuttall in 1931. To-day the company has a modern factory and foundry at Rosebery, N.S.W.

They are made in two sizes, 6" and 6½", the specifications of which are as follows:—

THE ALL-GEARED 6" CENTRE LATHE

Suitable for production and tool-room work, sliding surfacing and screw-cutting, twelve standard spindle speeds from 16 to 750 r.p.m. are obtained through sliding gears mounted on multi-spindle shafts. Head stock is totally enclosed and splash lubricated. It has a quick change gear box and 48 Whitworth threads and 48 feeds are available.

A double wall apron supports the gear shafts. A single lever for selecting sliding and cross feeds and an interlocking device between the dropworm lever and the lead screw clamp nut, prevent simultaneous engagement of feed motions. All feeds can be reversed from the headstock.

Four models are available: General purpose gap bed admitting work up to 20 in. diameter and straight bed lathes for special types of work.

be supplied if required and Nuttall single disc clutch and brake is provided on the input shaft for starting and stopping.

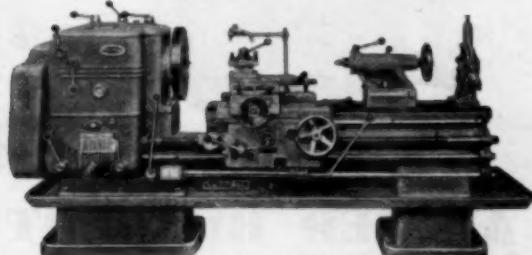
The work is done in batches on the semi-line system with first one model then another occupying the assembly line. The factory has been laid out to allow the minimum of movement between one operation and the next.

Raw materials, castings from the foundry, and all other works goods are received at the one entrance where they are either placed in a nearby store for future use, or else at once commence on the assembly line. They progress around the factory until as the finished product they complete a full cycle, finishing at the bay where they began. Heavy units are mounted on low, wheeled trolleys for ease in moving.

All important castings are normalized and parts are hand-scraped to achieve the high degree of accuracy required. Assembly is highly critical with careful inspection being made to ensure the utmost quality control. A staff under

separate supervision, having its own department equipped with precision equipment, master gauges and other tools, carries out tests at all important stages in the manufacturing process to ensure that

The jig and tool room is under the supervision of Mr. Simmonds who has been with the organisation almost since its inception. This vital section is a complete miniature machine shop having its own

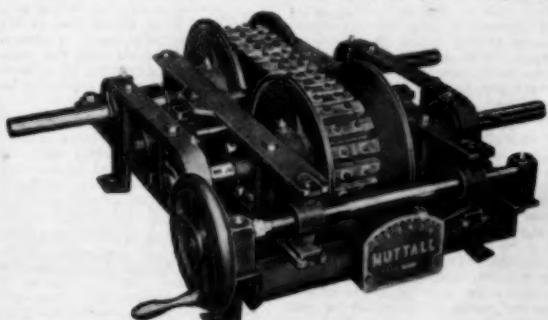


The "Nuttall" All Geared 6½ in. Centre Lathe.

close tolerances have been maintained.

Before leaving the works every lathe is inspected as to its precision and machining accuracy, and a certificate is supplied with each one sold.

self-contained plant and small heat treatment equipment. It is from here that special tools are issued and returned after use, and the maintenance of tools and dies is carried out as well as jig design. Another employee of very long



The "Nuttall" Variable Speed Transmission Unit.

HERBERT

MOTOR DRIVEN HIGH-SPEED DRILLING MACHINES

Made with 1, 2, 3, 4 and 6 Spindles



Herbert Type V Drilling Machine; capacity up to 1 in. Steel and 1½ in. Cast Iron.

Composite Drilling Machines, with exceptionally wide speed range, are formed by mounting different types of drilling columns on multiple drill bases.

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144 KING STREET, MELBOURNE
South Australian Representatives -
Queensland Representatives -
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FRANK DE ROSE & CO., 80 Waymouth Street, ADELAIDE
QUEENSLAND MACHINERY CO. LTD., 142 Albert Street, BRISBANE
A. FREDERICK HALL, 16 Judd Street, SOUTH PERTH

standing is Mr. Horsfield, Superintendent of the machine shop. This has a fine varied selection of equipment and machine tools, many of the lathes of course are made by Nuttalls. Among others who have been with the firm from the early days is Mr. Alf Raston who has seen vast changes since he joined the firm.

The need for a distributing company was felt after the war as more of the lathes reached the market. It was decided that a complete follow-up service could best be provided by such a company. Hence Modern Tools Pty. Ltd., was formed and Mr. W. Clegg appointed Director and General Manager in addition to his existing position as Sales Manager of the parent company in which he still continues.

Under Mr. Clegg's guidance the

firm has concentrated on distribution of lathes throughout Australia and New Zealand, appointing sub-agents in other States, but so far resisting appointments overseas. The company feels that the need for lathes in Australia at present is too great to allow export to be contemplated.

The service provided by the distributing company includes a complete spare parts service with the issue of special hand books containing exploded drawings and part numbering system so that ordering is simplified.

Asked to comment on the possible future of Australian made lathes Mr. Clegg said that his company felt that they had nothing to fear from competition from any quarter. "Our machines are produced without any bounty or subsidy," he said, "and have long since

overcome the prejudice against Australian workmanship. The demand is so great that purchasing of sufficient materials has become our greatest problem."

The Nuttall organisation sees the trend in design to be towards lathes offering higher speeds and a wider range of speeds to satisfy the manufacturers' cry for faster and more streamlined production. Nuttall has no doubt that its designing and manufacturing staff can continue to fulfill the need.

After Business Hours

(Continued from page 2)

"Worry affects the circulation, the heart, the glands, the whole nervous system. I have never

known a man who died from over-work. But I have known many who died from doubt."—Dr. Charles Mayo, of the famed Mayo Clinic.

• • •
They Said—about Worry: "Tell me, sweet lord, what is that takes from thee thy stomach, pleasure, and thy golden sleep?" (Shakespeare) . . . "It is a miserable thing to live in suspense; it is the life of a spider" (Swift) . . . "Suspense, the only insupportable misfortune of life" (Henry St. John) . . . "Worry is interest paid on trouble before it comes due" (Dean Inge) . . . "A hundred load of thought will not pay one of debts" (George Herbert) . . . "Nothing in the affairs of men is worthy of great anxiety" (Plato) . . . "Don't fight with the pillow, but lay down your head—and kick

RAW
MATERIALS

H. J. LANGDON & CO. PTY. LIMITED
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Sydney Office: 8 Bathurst Street

every worriment out of the bed"
(Edmund Vance Cooke).

One evening Tito went to a movie incognito. It so happened that he appeared in the newreel, whereupon stormy, enthusiastic applause broke out in the theatre. Suddenly his neighbour punched him in the ribs and said: "Why aren't you applauding, you idiot? Do you think we all want to be arrested just because of you?"—*Die Zeit*, Hamburg, Germany.

If you have something to do that is worthwhile doing, don't talk about it, but do it; your friends and enemies will talk about it.—*Ensign News*, African Clothing Factory Ltd. (Cape Town, South Africa).

Don't strut. The fact that you have a certain title or position does not prove anything except that maybe in selecting you somebody made a mistake that will be rectified later.

NEW FACTORY
REGISTRATIONS

NEW SOUTH WALES.
E. R. Payten, Commerce Street, Taree—Mechanical Engineering.

Vittali, A. P. J., Olympic Street, Taree—Joinery.

Welcome Night Pty. Ltd., cnr. Wentworth and Nelson Streets, Wallsend—Mattresses.

A. W. Engineering Co., 84 Chin Chew Street, Islington—Mechanical Engineering.

Boug & Purcell, River Street, Macksville—Joinery.

Clarence Earthenware Pipe & Tile Pty. Ltd., off Armidale Road, South Grafton—Tile and Bricks.

South Coast Motor & General Engineering, Lot 36 and 37, Princes Highway, Corrimal—Mechanical Engineering.

T. Dowling, Carlton Road, Thirlmere—Timber and Joinery.

Port Macquarie Ice & Ice Cream Supply, Gordon Street, Port Macquarie—Ice.

Gunnedah Brickworks Pty. Ltd., Mullally Road, Gunnedah—Bricks.

Hancock & Gore Ltd., Railway Reserve, Lismore—Timber and Joinery.

Kyogle Joinery Works, Lot 8, McDougall Street, Kyogle—Joinery.

L. S. M. H. & J. Piddington, 219 Beardy Street, Armidale—Furniture.

O. H. Shelton, Dorrigo—Joinery. Smith Bros. (Valla) Pty. Ltd., Valla, via Nambucca—Timber and Joinery.

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Lencol 2-ton Trailers provide an expandable, flexible means of moving big quantities of raw materials or fabricated goods. Small loads—up to 2 tons—are handled by one trailer. Progressively larger loads are coped with by the instant coupling of additional trailers. Each trailer has post holes all round to provide variable arrangements of posts and hurdles to suit the burden. Write for the free illustrated literature to any of these distributors:

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2-Ton Trailers

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A wide variety of self-aligning, sleeve and flanged bearings, thrust washers and special shapes of Sintered porous bronze available.

SINTALITE Bearings contain 30% oil and are silent, wear-resisting and economical. Applications include electric motors, fans, washing machines, marine engines, pumps and automobile starter, generator, water pump and king pin bushes.

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The Molong Freezing Works, Molong Street, Molong—Ice.
W. C. Wilkinson, Clyde Street, Kempsey—Mechanical Engineering.

Pioneer Sawmilling Co. Koora-watha—Timber and Joinery.

VICTORIA.

Arthur, W. R., 141 View Street, Bendigo—Children's Clothing.

Winikoff, Liston & Ligumski, 366 Little Bourke Street, Melbourne—Knitting.

Atkinson & McAnee, 43 Hall Street, Moonee Ponds—Aerated Waters.

Jackson, E., 25 Young Street, Moonee Ponds—Furniture.

Wylmah Trading Co. Pty. Ltd., rear 73 Leveron Street, Nth. Melbourne—Children's Knitwear.

Peters, F., Pty. Ltd., 601-11 Little Lonsdale Street, Melbourne—Sheet Metal and Galvanising.

Frusher, L. C. & L. J., rear 611 Little Lonsdale Street, Melbourne—Furniture.

Munro & Smith, Main Street, Minyip—Galvanising and Eng.

Burke, E. & C., Station Street South, Broadmeadows East—Cement Tiles.

Industrial Companies and Firms

NEW SOUTH WALES.
ALUMINIUM INDUSTRIAL DEVELOPMENT LTD.—Capital: £1,000,000. Manufacturers of articles of aluminium and other metals and materials. Subscribers: Harry J. Brigden, Harold M. Taylor, Edward J. Culey, Reginald C. Neave, Gordon A. Allman, Eric R. Lane and Walter R. Locke. Registered Office: Sydney. (Lodged by Allen, Allen and Hemsley, 53 Martin Place, Sydney.)

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GOODWILL TOUR OF AUSTRALIA.

NEW ZEALAND MANUFACTURERS.

The Minister for Commerce and Agriculture, Mr. McEwen, announced that a party of about 130 New Zealand manufacturers will arrive in Australia towards the end of April this year on a Jubilee Goodwill Tour. They will remain for three weeks, during which they will inspect factories and plants in three States—New South Wales, Victoria and South Australia.

CRYSTAL-LAPORTE

PTY. LTD.

MANUFACTURERS OF

HYDROGEN PEROXIDE—All Strengths
UREA PEROXIDE 34'35%
SODIUM PERBORATE—10% Active Oxygen

AUSTRALIAN AGENTS FOR

Laporte Chemicals Ltd., of Luton, England, can now offer for prompt delivery:

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- BENZOYL PEROXIDE
- CALCIUM PEROXIDE
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Enquiries for other organic and inorganic peroxides are cordially invited

CRYSTAL-LAPORTE PTY. LTD.

MELBOURNE: 36 Port Street, S.C.S. Tel.: MX 1910.
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This will be the largest organised commercial mission to Australia from another country.

The visit results from a suggestion made by the Australian Department of Commerce and Agriculture through its Trade Commissioner in New Zealand, Mr. Reginald Hazard to the Central Council of the New Zealand Manufacturers' Federation. It is completely endorsed by the Associated Chambers of Manufactures of Australia.

"Local manufacture of goods in our sister Dominion has been expanding steadily," Mr. McEwen said. "The New Zealand Government is pursuing a vigorous policy of encouraging secondary industry with the object of increasing employment and conserving foreign exchange. Australia is vitally interested in these developments; we are already substantial participants. Apart from the fact that there are a number of Australian companies with their subsidiaries

or affiliates in New Zealand, that Dominion depends upon us for a supply of certain raw materials as well as plant and equipment.

"Australian exports to New Zealand have shown a progressive increase over the past few years. Our exports rose from £14,563,000 for year ended December, 1948, to £18,930,000 for the year ended December, 1949. Reflecting the expansion of the engineering industry in Australia, the greatest increases are occurring in engineering products. Between 1948 and 1949 the increase was approximately £400,000, and final figures for 1950 will show an even greater increase."

"New Zealand is probably our biggest market over a full range of secondary industry manufactures. Of a total of £21,500,000 in exports for the year ended June, 1950, approximately £13,000,000 came from our secondary industries, unlike the majority of our overseas markets, where our pri-



AUSTRAL STEEL WOOL

A grade for every purpose.

Quickly and thoroughly cleans and polishes metal. Austral is a special Steel Wool, made up of long strands, produced expressly for general machine-shop and factory use and for finishing aluminium, enamelware, copper, brass, porcelain baths and basins, glass cooking dishes, refrigerators, etc., and preparing surfaces for varnish, paint and lacquer. Industrial supplies are obtainable from



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many products predominate in both percentage and value.

"The Commonwealth Government has extended a cordial invitation for this Jubilee visit. It should serve a very useful purpose in promoting good relationships between the two Dominions.

"It speaks well for the keenness of New Zealand manufacturers that such a large and representative group have availed themselves of this opportunity."

The manufacturers nominated for the tour covered a wide industrial field. Mr. McEwen added. Their Australian itinerary, which would provide for plant and factory inspections in the three States, was now being worked out by Departmental officers in co-operation with Chambers of Manufactures.

Present plans are for the visit to begin with the arrival of the party by air in Sydney. The duration of the official tour will be for three

weeks, though individual visitors may prolong their stay.

CHLOROMYCETIN—LIFE-SAVING DRUG.

PRODUCED IN AUSTRALIA.

First Australian production of synthetic Chloromycetin was completed in February, according to an announcement made by the Minister for Health, Sir Earle Page. "The new drug will be an important addition to therapeutic agents such as penicillin, vaccines and sulpha drugs which are now produced in this country," he said.

Chloromycetin is a product of Parke, Davis and Company, who developed the drug and processes for its manufacture in America. It will be prepared and distributed to the medical profession by the Sydney laboratory of this Com-

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High-Grade
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COLD GLUES...GUMS...PASTES

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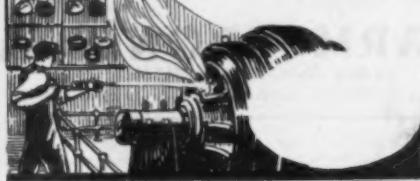
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The Pyrene Fire Extinguisher is the smallest of all fire extinguishers, and is the only extinguisher that will put out absolutely **EVERY** kind of fire.

It works like a pump—the stream of special Pyrene liquid changing to 189 cubic feet of non-poisonous fire-extinguishing vapour on striking the flames. Kills petrol and oil fires at the start, and is perfectly safe against electrical fires. It does not injure the burning material in any way.

It should be carried on all motor conveyances—cars, trucks, buses, boats, etc.—and installed wherever electrical machinery is used. It is invaluable in home or factory.



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27 TRACEY STREET, HURSTVILLE, N.S.W.

pany. Monsanto Chemicals (Australia) Limited is operating chemical processes required for the manufacture of the drug at its plant in Melbourne.

Chloromycetin is effective in the treatment of primary atypical pneumonia, bacterial pneumonia, urinary infections, whooping-cough, undulant fever, typhus fever and typhoid fever.

"This project has had the full support of the Commonwealth Government," Sir Earle Page said. Chloromycetin has been accepted by the American medical profession as an important new antibiotic and its use in that country has increased rapidly during the past two years. Australian requirements have been imported from U.S.A., and it is inevitable that demand by the Australian medical profession will grow.

Local production will mean, not only an important saving in dollar expenditure but will assure Australia of its requirements should importation become difficult. Furthermore, the drug is an item of military importance since it is the only proven remedy for scrub typhus which is endemic in the regions to the north of Australia.

Chloromycetin has a wide range of effectiveness. It is particularly effective against typhoid fever, typhus and certain types of pneumonia and urinary tract infections. It shows great promise against whooping-cough. In the case of typhus and related diseases, it is the only proven therapeutic agent. There are preliminary indications of a much greater range of usefulness and these are rapidly being evaluated in actual clinical usage. Chloromycetin is easily administered by capsules taken orally as often as every three hours depending on the severity of the infection. Chloromycetin is well-tolerated. Side-effects such as nausea, headache, skin eruptions and enteric symptoms rarely follow the use of clinically-effective doses of Chloromycetin.

Soon after its discovery and initial manufacture by the fermentation process, Parke Davis chemists proved that Chloromycetin had a chemical structure which would permit its synthesis in the laboratory. A commercially practical process for manufacture of the drug synthetically was subse-

quently developed. The synthetic process is the one now being operated by Monsanto in Melbourne, and this probably represents the most complex manufacture yet carried out by the Australian chemical industry. Other antibiotics, such as penicillin, are produced only by fermentation processes requiring elaborate and costly plants. It would have been impossible to set up a fermentation plant in the short time that has been required to produce Chloromycetin in Australia by the synthetic process.

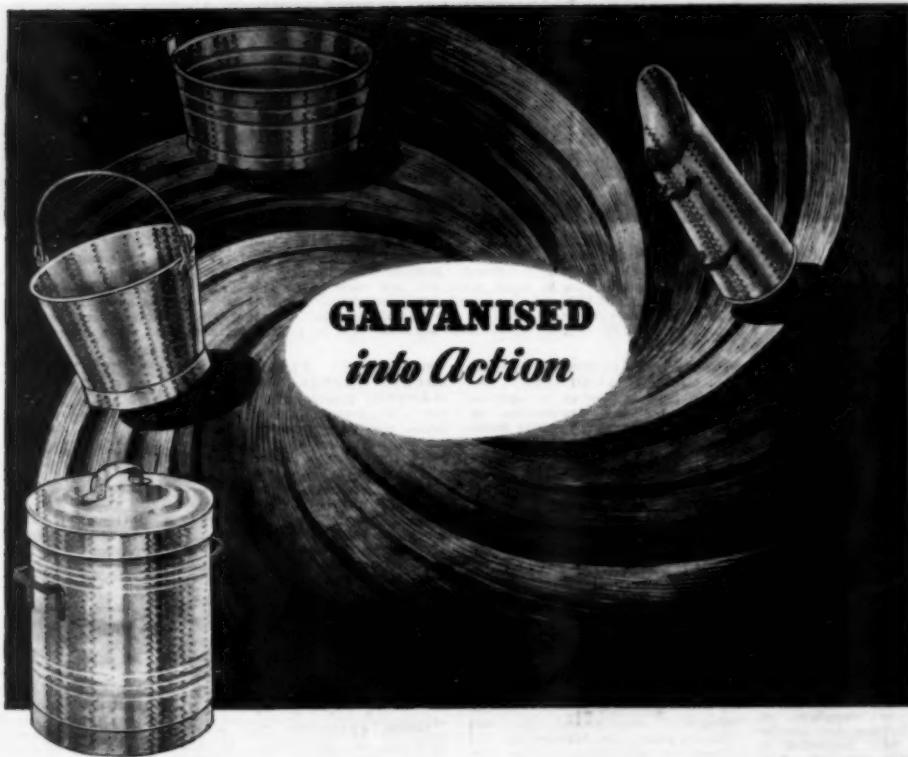
PROGRESS OF PRESTIGE RAYON FABRIC GROUP.

At an extraordinary meeting of Prestige Ltd., held recently in Melbourne, the chairman, Mr. G. G. Foletta, predicted that sales of the rayon fabric group should more than double during the ensuing year. "From a production rate of about a million yards a year just prior to the granting of the Protective tariff last December," he added, "production has already been stepped up to more than 1½ million yards annually. It should reach four million yards before the end of the ensuing year, and rise to about five million yards within two years." He then went on to point out that Prestige Fabrics, Dapco, and Dyecraft are at the moment supporting a big expansion of output, weaving rayon dress materials and rayon fabrics, dyeing, printing, and finishing rayon dress goods and other piecegoods. "The Protective tariff," he concluded, "gave confidence all round. It gave directors confidence, heartened employees, and increased public demand."

Could one imagine a more splendid example of the beneficial effects of adequate tariff protection of efficient enterprise?

NEW "FIBROLITE" FACTORY.

A large factory is to be erected in Queensland by James Hardie & Co. Pty. Ltd. to produce "Fibrolite" asbestos-cement pipes. Production is expected to be sufficient to meet Queensland's requirements.



J. W. Tomlin takes a sheet of ordinary iron and galvanises it into action for your use. It is twisted, turned and pressed so that a plain sheet becomes an article of utility, maybe a homely bucket or garbage can. Perhaps something more pretentious — but, whatever J. W. Tomlin turns out, you can be assured that it is finished in a superior way and is worthy to bear the J.W.T. brand, which is embossed on every article this reliable firm turns out. When buying Galvanised Ware, Tinware or Sheet Metal Ware, buy the article bearing this symbol: 



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679-695 BOURKE ST., SURRY HILLS, SYDNEY

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INQUIRIES FOR PLANT MATERIAL AND AGENCIES

"THE AUSTRALASIAN MANUFACTURER'S" INQUIRY DEPARTMENT

This Inquiry Service is for the use of readers of "The Australasian Manufacturer" who wish to trace suppliers of Plant, Equipment and Materials, and for particulars of agencies offered. Address your inquiry to the Inquiry Department, and give the fullest possible particulars to enable us to put you in touch with the best sources of supply. **INCLUDE A STAMPED SELF-ADDRESSED ENVELOPE WITH YOUR INQUIRY.** It is essential that telephone inquiries be confirmed by letter. No charge is made for Inquiry Services, but normal advertising rates will be charged if agencies are sought by manufacturers' representatives or if goods are offered for sale. For the benefit of new subscribers, inquiries will be published in two or more consecutive issues.

SPECIAL NEW INQUIRIES.

WHEN REPLYING to an Inquiry, please quote the Reference Number and send your reply to the Inquiry Department, "The Australasian Manufacturer", Box 1687, G.P.O., Sydney. **INCLUDE A PLAIN, STAMPED ENVELOPE**

so that we can forward your reply to the Inquirer.

ROUND FREE - CUTTING STEEL: Sydney firm requires supplies of Round Free-cutting Steel, 1/2 in., 1 in. and 1 1/2 in. Purchase or exchange for bigger sizes. Write to Ref. 8402, c/o "The Australasian Manufacturer."

CLEAR PLASTIC TUBING: Manufacturers or suppliers of Clear Plastic Tubing for insulation purposes, are requested to write to Ref. 8403, c/o "The Australasian Manufacturer."

POLYSTYRENE: Australian makers of this material, interested in export, are requested to write to Ref. 8404, c/o "The Australasian Manufacturer."

DIESEL AIR COMPRESSOR UNIT: - Vertical Southern Cross 4-Cylinder Engine, with C.P. Compressor. Displacement 100 cubic feet, with Air Receiver. Overhauled, guaranteed first-class order. Write to Ref. 8577, c/o "The Australasian Manufacturer."

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SUPPLIES OF BURNT LIME: Manufacturer requires regular small quantities of Lime (hydrated or slaked lime powder), burnt, or alternatively regular small quantities of burnt Lime powder. Write to Ref. 8395, c/o "The Australasian Manufacturer."

ELECTRO-MAGNETIC AND ELECTRO-STATIC SEPARATORS: Manufacturer desires to contact suppliers of Electro-Magnetic Separators and also Electro-Static Separators for the treatment of Beach Sands containing Ilmenite, Zircon and Rutile. Write to Ref. 8396, c/o "The Australasian Manufacturer."

MILD STEEL BAR WANTED: Tasmanian engineering organisation urgently requires 2 in. square mild steel bar, short ends or lengths. Enquirer in cutting bar into pieces 1 1/2 in. long. Write to Ref. 8397, c/o "The Australasian Manufacturer."

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BLANKING PRESS AND SHEET METAL MACHINE
WANTED: Sydney firm wants to buy a large double crank blanking press, also any large sheet metal machines. Write in Ref. 8398, c/o "The Australasian Manufacturer."

SLOT MACHINES: Singapore Company desires to contact Australian makers of slot (fruit) machines and also any general lines of slot amusement and vending machines. Write to Ref. 8399, c/o "The Australasian Manufacturer."

KEROSENE BURNERS
WANTED: Victorian manufacturer of room heaters is endeavouring to find a supplier of Kerosene burners. Write to Ref. 8400, c/o "The Australasian Manufacturer."

DOOR CLOSERS: The manufacturer or distributor of the "Zeus" Door Closer, is requested to write to Ref. 8401, c/o "The Australasian Manufacturer."

HARDWARE AGENCIES—NEW
ZEALAND: New Zealand firm specialising in the sale of Builders' and Cabinetmakers' accessories and having contacts with all wholesalers in the hardware trade throughout New Zealand, desires to contact Australian manufacturers who are looking for an outlet for their products in the Dominion. If required, the goods could be either assembled or finished in New Zealand. If interested, write to Ref. 8390, c/o "The Australasian Manufacturer."

We invite

AUSTRALIAN MANUFACTURERS

who require Experienced and Exclusive Representation in London, to refer to our notices in previous issues of "The Australasian Manufacturer." In particular we draw attention to our PERSONAL SELECTION OF EXECUTIVES, TECHNICIANS AND OPERATIVES who are eligible for Assisted Passages. This is proving a valuable service to our other Principals in Australia in acquiring fully qualified, reliable employees.

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United States Bureau of Labour and Statistics, emerged the amazingly interesting fact that the purchasing power of the Australian worker in 1950 was the highest of the twenty countries studied. The United States ranked second, Russia last. Estimating purchasing power on the working time required to purchase a certain amount of food, wage earners in Canada, Britain, Israel, and the Scandinavian countries had to work from 20 to 60 per cent longer than Australians, while Soviet workers had to work more than seven times as long as Australians to buy the same quantity of food. The order was Australia, the United States, Norway, Canada, Denmark, Israel, Sweden, Britain, Czechoslovakia, Ireland, Switzerland, Finland, Netherlands, West Germany, Chile, France, Austria, Hungary, Italy, and Russia.

These facts and figures should cause Communist adherents seriously to ponder.

PROPOSED ROUND-TABLE CONFERENCE.

Mr. Douglas Fell, President of the Australian Council of Employers' Federations, suggested in Melbourne during the past week the convening of a round-table conference of leaders of employers' organisations and leaders of the trade-union movement. "The conference," he added, "should be attended by industrial leaders drawn particularly from such basic industries as coal, electricity undertakings, steel, and transport. This Council has always expressed willingness to confer with the trade-union movement and already maintains a close and continuous liaison. However, conferences such as the one proposed must be approached with an air of realism." And, "The Manufacturers" may add, with minds free from prejudices and pre-determined resolutions, especially those relating to incentives to production increases. As a matter of fact, as the Associated Chambers of Manufactures recently pointed out, little good can emanate from such gatherings until militant trade-union leaders adopt a broader outlook.

BRADFORD COTTON APPOINT- MENT.

Mr. E. W. Kyle has been appointed assistant general manager of Bradford Cotton Mills Ltd. and Mr. B. C. Moller secretary and public officer in his stead.

BIG GOVERNMENT TYRE ORDER.

Tenders worth nearly £52,000 have been accepted by the Federal Government for the supply of motor vehicle tyres.

The tyres are being purchased under the Government's programme of stock piling strategic materials for defence purposes.

The Commonwealth Gazette announced the acceptance of tenders from Olympic Tyre and Rubber Co. Ltd., Hardie Rubber Co. Ltd., Dunlop Rubber (Aust.) Ltd., and Goodyear Tyre and Rubber Co. Ltd.



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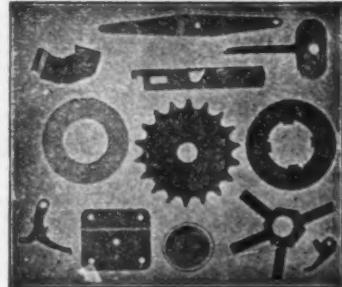
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NEW ELECTRICAL ENGINEERING FIRM.

Mr. Ray G. Pank, who for the past 18 years had been with Parsons & Robertson Ltd., Adelaide electrical engineers, and had been the company's works manager since his discharge from the A.I.F. after World War II, has resigned to open business on his own account as a manufacturers' agent.

Mr. Pank has been appointed South Australian representative for F. W. Davey & Co. Pty. Ltd., of Melbourne, and will shortly be established at an office in Pirie Street, Adelaide. He will supervise distribution in S.A. of the well-known F. W. Davey range of motors, generators, lighting plants and components pertaining to allied equipment.

A feature of the F. W. Davey output at present is a heavy-duty 1 h.p. motor which is particularly suitable for refrigeration units. It is available for 32, 110 or 230 volts.

A 40 amp. 32 volt contactor has recently been added to the range. This is of special interest for use in conjunction with thermostat controls on low-voltage equipment.

RHEEM INCREASES CAPITAL.

Rheem Manufacturing Company (Aust.) Pty. Ltd., in which B.H.P. has a substantial interest, has lifted its capital from £200,000 to £600,000.

The company manufactures steel containers, water heaters and other appliances, and was formed in 1936 by Rheem Manufacturing Co. of U.S. and B.H.P., each of whom held a half interest in the then capital of £100,000.

It operates plants in Melbourne, Sydney, Adelaide, and Brisbane, as well as a link in Singapore with Hume Pipe Far East Ltd.

"INDUSTRIAL COSTS AND EFFICIENCY."

The February issue of "Review", published by the Bank of New South Wales, contains an article of particular moment to Australian manufacturers. It is "Industrial Costs and Efficiency." By means of able letterpress, and a series of graphs and statistical tables, it discusses virtually every aspect of the all-important question of production costs. It remarks at the outset: "After its initial post-war advantages the competitive position of Australian industry has deteriorated in the past year or so. In its last Annual Report the Tariff Board found that production costs, both of labour and materials, had increased faster than in comparable industries overseas. Many of the problems confronting Australian manufacturers, lack of coal and power, irregular supplies of raw materials, and rising transport costs, lie outside their control. But in the existing defence emergency, coinciding with a dangerous state of inflation, it is imperative to draw attention to trends in costs in production with a view to restoring a greater measure of efficiency."

"The Manufacturer" recommends the article to the study of its readers.

NEW MANAGING DIRECTOR —H. P. GREGORY & CO. LTD.

Mr. D. Finlayson has resigned as managing director of H. P. Gregory and Co. Ltd., of Sydney, but will continue as chairman. Mr. W. J. Wilson has resigned from the directorship of Noyes Bros. (Sydney), Ltd., and associated companies, and will be managing director of H. P. Gregory & Co. Ltd.



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EARLY MARKETING OF LATEX FOAM?

According to Mr. W. B. Hardeman, Australasian manager of the British Rubber Development Board, latex foam, a rubber powder capable, among other achievements, of raising the "melt point" of bitumen, will soon be marketed in Australia. The Rubber Board, which recently opened an office in Melbourne for non-profit-making activities, is associated with research institutes in Malaya and Britain. It is to be financed by a fund of 9d. imposed by the Malayan Government on every 100 lb. of rubber produced in Malaya.

AGENT FOR BEDFORD INDUSTRIES.

With reference to a paragraph in a recent issue dealing with non-splinter airers for clothes and other products of Bedford Industries, Springbank, S.A., it was omitted to mention that the factory representative for all States for these products is Mr. T. G. Tuscombe, 89 Flinders Street, Adelaide.

Rungs of the clothes airers (or what used to be called "clothes-horses") are sheathed in a plastic material in various colours. Step-ladders, washing-boards, and bath mats are other notable products of Bedford Industries, a factory conducted by the Tuberculosis Association of S.A.

INDUSTRIAL INVESTMENT.

In the course of an interesting address to the Melbourne Junior Chamber of Commerce, Professor W. Prest, Dean of the Faculty of Commerce at the University of Melbourne, gave his audience this solid advice: "Take your nest-eggs out of the banks and put them into goods. There is evidence that people are already doing this to avoid their savings losing their value through inflation."

Advice along these lines has been given by "The Manufacturer" since its inception, it having consistently pointed out to Australians that in the long, and even in the short, run, backing their industries will pay them far handsomer dividends than backing their "certs" at Flemington, at Caulfield, and at Randwick.

EMAIL SELLS OIL ENGINE INTEREST.

Electricity Meter and Allied Industries, Ltd., has sold its interests in British Oil Engines (A'asia) Pty. Ltd., to Associated British Oil Engines (Export), Ltd., London (ABOEX).

British Oil Engines (A'asia) Pty. Ltd., for the past four years has distributed in Australasia Aboex Diesel, petrol, and kerosene engines and generating sets.

It will join the Aboex group.

NEW REPCO FORGE CO.

With a nominal capital of £1,000,000, Kirkstall-Repcos Ltd., drop forging manufacturers, was registered in Melbourne last week.

A joint interest is held by Repco Ltd. and Kirkstall Forge Ltd., of Leeds, England. Initial paid capi-

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"ROBINCRAFT"

Has enabled many branches of industry to maintain full production during gas and power restrictions. "Robincraft" Kerosene Pressure Jet Heating Units have given quick and economic service.

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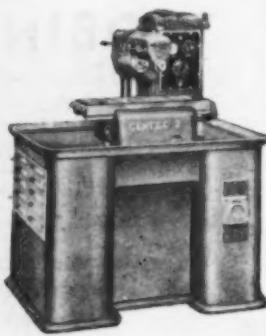
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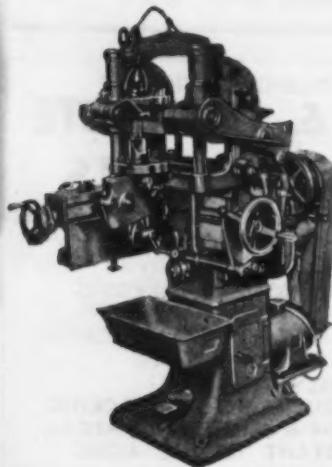
This is a unique Milling Machine embodying many new features. It is essentially a machine made for the mass production of small components. The machine works either completely automatically or in automatic repeating cycles. It is an ideal machine for the mass production of small links and forms. THE MAIN DRIVE is by direct current motor, fed and controlled electronically from a 3-phase alternating current supply. THE TABLE FEED is hydraulic, giving an infinitely variable range.



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A punch or profiled part shaped on the Essex-32 is cheaper and superior in finish. A simple, inexpensive tool is used on the machine for shaping straight or taper finishes from the solid, with or without foot plates. The first and only setting-up of the machine gives such a high degree of accuracy that, with only few exceptions, punches can be completely finished on the machine. Model 32 is simple, accurate and highly efficient in workshop operation.



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tal will be subscribed by these
companies.

Land has already been bought
at Clayton, Melbourne, for a factory
to produce heavy motor
vehicle front axles and drop forg-
ings.

SYDNEY FIRM ACQUIRES SUBSIDIARY.

President Consolidated, Ltd., has
acquired the business of Triplex
Universal Co.

Triplex makes sheet metal products
at West Ryde.

A subsidiary company—Triplex
Universal Pty., Ltd.—is being
formed to take over the business
by an exchange of shares with
President Consolidated.

BITUMEN AND ASPHALT FOR ROAD-MAKING PURPOSES.

The Standards Association of Australia announces the issue for public critical review and comment of a draft Australian Standard Specification for Residual Bitumen and Fluxed Native Asphalt for Roadmaking Purposes, this being a revision of A.S. No. A.10:1938. It is issued as Doc. 168.

The revision makes provision for a new grade of bitumen with a penetration of 50-60, while the grade with a penetration of 20-30 has been deleted. In addition, the existing limits prescribed for the various properties have been amended in almost all cases. Information regarding the current demand for roadmaking purposes of bitumen and fluxed native asphalt with a penetration of 20-30 would be appreciated by the Committee concerned.

Copies of the draft specification can be obtained from the Standards Association of Australia Headquarters Office, Science House, 157 Gloucester Street, Sydney, and from branch offices in

all capital cities of the Commonwealth and in Newcastle, N.S.W., to which addresses, comments on the draft should be sent not later than 30th April, 1951.

MECHANICAL EQUIPMENT FOR CLEANING OUT POULTRY TRAYS.

The manual scraping and cleaning of dropping trays entails a large amount of hard work in the poultry industry and, up to the present, there has been no mechanical method of doing the operation successfully. New equipment developed by a North of England firm consists of two brushes—one stationary and the other a roller type, revolved by means of an electric motor. All the operator has to do is to place the tray between the two brushes and rub it up and down between them while the tray picks up clean water from a tank on each upward stroke. By this method the tray can be cleaned very quickly, thus saving time and labour.

Lying cage floors, and battery and ark wire floors can also be cleaned by this method. The equipment is easily portable, and is ready for use simply by plugging in to an electric point. (2726).

VARIABLE TRANSFORMER GIVES SECONDARY VOLTAGE.

The regulating of the intensity of illumination for shop windows, stage lighting and similar displays, calls for a simple and highly efficient apparatus. An electrical firm has produced a range of variable transformers, built on the auto-transformer principle, to meet these requirements.

With these transformers, which are fitted with a graduated scale and a knob, a secondary voltage (Turn to page 46.)

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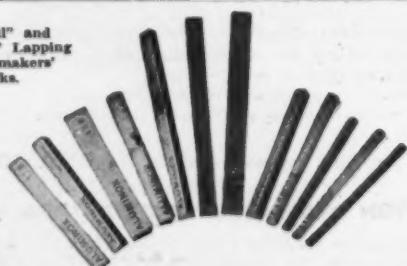


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(Continued from page 44)
can be obtained that is variable from zero to two per cent. above the nominal primary voltage. The efficiency is high, the graduated scale permits exact regulation to the fraction of a volt, and owing to the low voltage loss there is constant regulation.

These variable transformers also have a wide field of application in research, testing and repair departments. In combination with valve rectifiers they can quite easily be used to give an efficient and continuously variable direct current supply unit. [2746].

AUTOMATIC ELECTRICAL BALANCE.

Scientific weighing processes generally involve opening the balance case and the paneling, and the handling of the weights on and off the scale pan, followed by the adding up of the total weights. Besides causing possible disturbance of the air, which involves a longer time for the pointer to settle, there is a greater chance of inaccuracy due to the possibility of chipping or damaging the weights themselves. Further error may be caused by wrong addition of the weights on their removal from the scale pan.

A new balance being produced is completely automatic. All the weights, up to the full range of 100 grammes, are controlled from outside the balance, and thus there is no need to open the case.

The mechanism controlling the rider weights now has a parallelogram movement which gives a straight lift to the weights—a considerable improvement on the former arc or semi-circular movement. [2737].

PORTABLE CHAIN SAW FOR TREE FELLING.

The usual method for tree felling and cross cutting is wasteful both of effort and time. A portable saw is now being manufactured by a British firm which is power driven and can be operated and easily carried by two men. Its net weight is only 130 pounds and it packs into a case eight feet by two feet.

The saw is powered by a two-stroke engine which develops 6½ brake horse power and drives an endless chain made up of exceptionally fast cutting teeth. A multi-disc type clutch is specially designed so as to allow the engine to run while the saw is idle, thus saving time in stopping and starting the engine. In the event of the saw suddenly binding, the clutch will slip automatically. The cutting teeth comprising the chain are staggered, and each tooth is easily accessible and can be sharpened like an ordinary saw.

The saw will cut through a log two feet in diameter in about 45 seconds and is equally successful when used for cutting small branches or trimming. [238].

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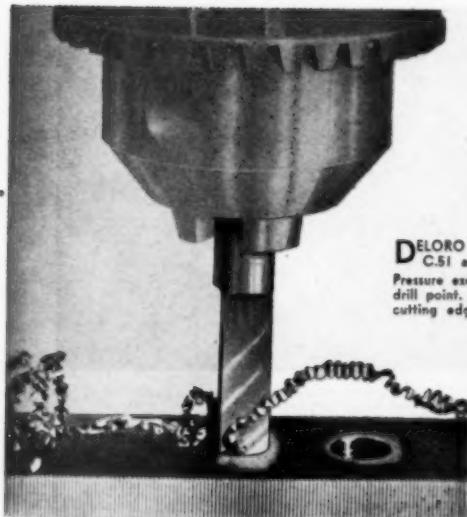
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A heavy pressure must be used to start and maintain the cutting action and the chips come off at a dull red heat. The heat generated is purely local and does not affect the bulk of the steel. A slight rounding of the cutting point does not adversely affect its cutting properties and the drill can be reground by hand when necessary.

Without previous preparation they will drill such components as hardened gears, molybdenum steel hock saw blades, hardened armour plate, ball bearings to make gauges, hardened spring steel, hardened dies, hardened crankshaft journals, etc.

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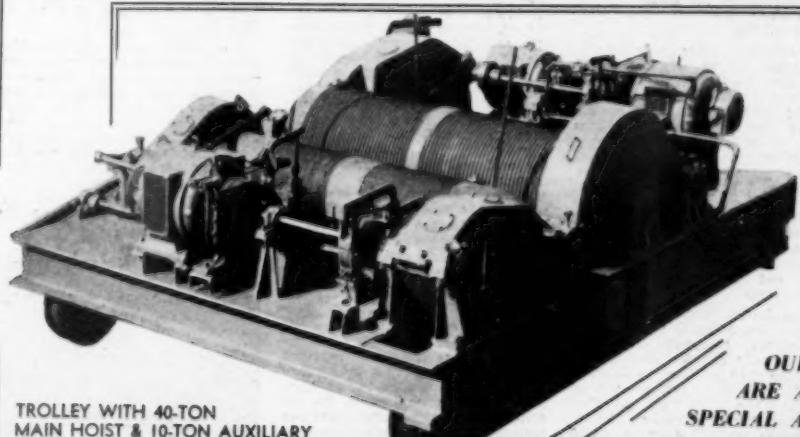


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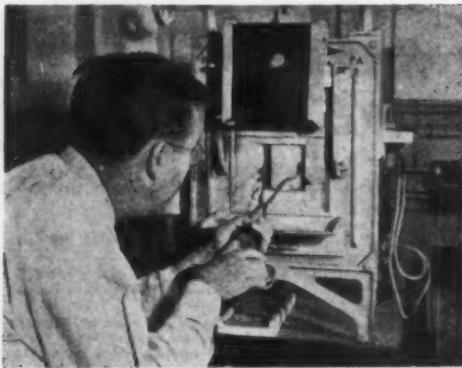


Fig. 1. After mixing, the raw materials (less the fluorosilicate compound) are placed in a ceramic crucible and heated at 1,000° C. for an hour.



Fig. 3. The platinum crucibles are stripped from the crystal mass, and individual crystals of synthetic mica are then separated.

Synthetic Mica

Successful crystallization of artificial mineral

Synthetic mica, with essentially the same properties as natural mica, but able to withstand much higher temperatures, has now been crystallized successfully by Dr. Herbert Insley, Alvin Van Valkenburg, and Robert Pike at the U.S. National Bureau of Standards. This work is part of a broad programme of fundamental research on fluorine-type artificial minerals carried on by the National Bureau of Standards under the sponsorship of the Office of Naval Research. The synthetic mica phase of the programme has been carried out in co-operation with the U.S. Bureau of Mines and Colorado School of Mines.

In the Bureau's work on synthetic mica the requirements of eventual quantity production have always been kept in view. Mica could be synthesised by duplicating the conditions under which it is formed in nature, but this would involve extremely high pressures as well as high temperatures. For safety and convenience it is better to work at atmospheric pressure. For that reason the Bureau's scientists are using fluorine as a crystallising agent to grow crystals of mica without using high pressure. Natural fluorine is a gas, poisonous and difficult to con-

trol. But a group of synthetic fluorine compounds, the fluorosilicates, provides a convenient way of introducing fluorine into mica synthesis.

An article in "Machinery Lloyd", reproduced from the Bureau's Technical News Bulletin, points out that the raw materials for making synthetic mica are similar to the raw materials sometimes used in making glass: quartz, magnesite, bauxite, and a fluorosilicate compound (the only unusual ingredient). These are first weighed out on a delicate balance to within .01 gram. The mixture consists of 38 per cent. silicon dioxide, 13 per cent. aluminum oxide, 28 per cent. magnesium oxide, and 23 per cent. potassium fluorosilicate.

After initial mixing, the batch of raw ingredients, without the fluorosilicate compound, is placed in a ceramic crucible and heated for more than an hour in an electric furnace at a temperature of 1,000° C. (Fig. 1). This calcining operation drives off carbon dioxide and water which otherwise would interfere with the formation of good crystals of synthetic mica. The calcined ingredients are carefully ground together with the potassium fluorosilicate in a ceramic mortar to obtain uniform mixing. This grinding must be performed quickly to prevent recapture of moisture and carbon di-

oxide form the air. The dry ingredients for mica synthesis are then packed into a cylindrical platinum crucible with a con-shaped bottom. A sand-filled ceramic container is used to support the thin-walled (.003 in.) platinum. A platinum cover seals the crucible against loss of fluorides. The completed charge is then lowered into position in a special electric furnace and melted at a temperature of nearly 1,400° C. (Fig. 2). As the furnace cools, mica crystals grow from a seed at the bottom of the crucible. Thermocouples are placed near the charge to record temperature changes and provide a thermal history of the crystallisation. The most satisfactory synthetic mica developed so far has the chemical formula



This is equivalent to a form of natural mica in which the hydroxyl radical has been replaced by fluorine. Impurities may occur in the synthetic mica in the form of milky films parallel to the individual layers or white patches between crystals. Crystals free of impurities are clear and transparent, and thin flakes are easily split away along the planes of natural cleavage. The synthetic form has physical properties which compare favourably with natural mica. Electrical measurements on several clear flakes, 1 in. square by $\frac{1}{2}$ in. thick, indicate a dielectric

constant of about 6.3. The largest crystals grown so far at the National Bureau of Standards have a surface area of 4 sq. in. (Fig. 3).

The small platinum crucibles used in experimental mica synthesis at the National Bureau of Standards are carefully stripped away from the crystal mass, which is denser and more compact than the original charge. Individual crystals of synthetic mica are then separated for the determination of their physical properties.

Satisfactory mica synthesis depends to a large extent on the

(Turn to page 52.)



Fig. 2. The dried ingredients are packed in a platinum crucible and melted at 1,400° C. As the furnace cools, mica crystals grow from a seed at the bottom of the crucible.



Fig. 4. Flakes of synthetic mica are examined under a binocular microscope.

Inhalation Therapy in Industry

A review of progress in the search for a standard technique

Minor disabilities, due to affections of the nasopharynx and respiratory system, cause a considerable amount of sickness absence in industry, not because of any industrial hazard but in the general daily exposure to infection.

Heating and ventilation make some contribution to a healthy working environment in the factory, but there are numerous occupations in which exposure to extremes of temperatures is unavoidable, this tending, in susceptible persons, to produce respiratory trouble.

It seems, therefore, that in spite of ideal working conditions these minor disabilities will occur, and some measures have to be found to cure or minimize them. Many of these patients are not sufficiently handicapped to cease work, and yet they may be a source of infection to others. Clearly, here is an opportunity for devising some form of simple treatment which is easy to administer, takes up little time, and helps the worker back to normality.

A CERTAIN proportion of employees of the older age-groups are more prone to catarrhal affections and, with the gradual alteration of the age structure of the population and perhaps a later retiring age, this problem is likely to become more acute as the years go on. It is likely to be of assistance to this group to feel that such workers are receiving regular care and attention for conditions for which they might not seek medical aid outside working hours. The moral effect of receiving treatment, without being made to feel that they are being regarded as invalids, is very great in elderly employees.

Inhalation therapy for respiratory infections appears to fulfil the necessary conditions of simplicity, continuity, and little loss of time; it offers the added advantage of easy tabulation of results and formation of conclusions.

TYPES OF APPARATUS USED.

The simplest form of inhalation is by vapourising a volatile substance by means of a vessel containing hot water, the steam being inhaled, under an improvised tent. Discussing Inhalation Therapy in "The British Journal of Physical Medicine," A. W. Bolland, M.B., Ch.B., says that no doubt such a form of treatment gives temporary relief to conditions such as laryngitis and "sore throats," but it is unsuitable for large-scale use in a factory, and cannot be claimed to be of specific therapeutic value.

Aerosolizers.—These produce a fine mist of a therapeutic substance in a liquid paraffin vehicle. They are useful for personal application to nasal passages or as a throat spray, but are of doubtful value in inhalation because of limited penetration to the bronchi.

Aerolysers.—This type of apparatus is admirably suited to factory use. It consists of an electrically driven compressed-air motor, operating on a fine jet of special design, and capable of breaking up an aqueous solution into very fine particles (3 microns or smaller in size), and of delivering this aerosol, under slight positive pressure, through a flexible tube to a metal face-piece. The mist so produced is capable, on inhalation, of penetrat-

ing to the finest bronchioles. This treatment has been in use in two British factories for the past two years with excellent results.

TYPES OF CASES SUITABLE FOR INHALATION THERAPY IN THE FACTORY.

Infective and Inflammatory conditions.

The common cold.—This virus infection causes, yearly, a serious

Subacute bronchitis.—Many employees come back to work with signs of catarrh in the chest. They can be allowed to resume work if the working environment is suitable, or if suitable temporary occupation can be found until their complete recovery, which can be hastened by inhalation therapy.

Bronchiectasis.—This condition will scarcely come under the factory medical officer's care, except

individual. This type of patient can be helped by inhalation therapy.

Hay fever.—During the summer months a small number of employees develop this distressing condition, and probably many more suffer from "summer catarrh" and mild conjunctivitis. Town dwellers now have more opportunities of spending leisure in the country, and it may be that exposure to grass pollens will lead to an increase in the number of cases. For workers who have omitted to have a course of desensitisation, much can be done to relieve the discomfort, keep them at work, and allow them to enjoy recreation and sporting activities.

SELECTION OF CASES.

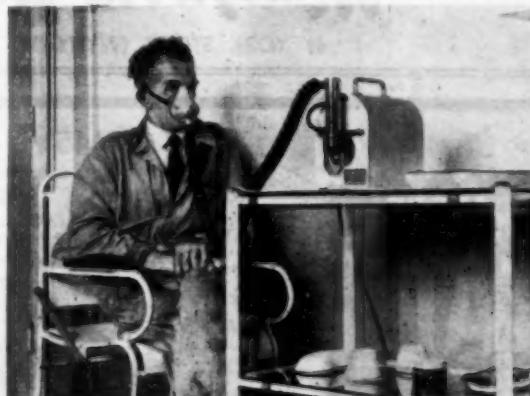
The above are some of the common conditions which can benefit from inhalation therapy, with very little demand on time and great gain in well-being, both physical and psychological.

Before deciding to employ inhalation therapy, it is necessary to make an initial physical examination of the patient. This is compared with previous examination data, and such items as loss of weight or changes in blood pressure are noted. For example, in subacute or chronic chest conditions it is necessary to eliminate the presence of tuberculosis and to have the possibility of early carcinoma constantly in mind. Very often the factory medical officer is able to see disease in its earliest stage before a worker considers himself to be ill enough to cease work. He has, therefore, an unrivalled opportunity in the field of preventive medicine.

THERAPEUTICS.

Over two years ago, says the author, it was decided to install an aerolyser in two fairly large factories. Careful notes were made of all cases treated, and the results were tabulated with reference to disease, type of inhalation, length of treatment, and result. The work was largely experimental, and a fairly large number of substances were used, alone and in combination.

(Turn to page 51.)



Aerolyser in use.

loss of working time, chiefly because of secondary bacterial invasion. Many colds are afebrile, and so these patients can be treated at work. It is important to begin treatment on the first or second day, during the stage of clear nasal discharge.

Laryngitis.—The disorder is frequently a sequel of common colds, leading to aphonia in some cases, and always causing discomfort and inconvenience.

Tracheitis.—The condition is a sequel of colds with secondary infection, and may be regarded as the halfway stage to acute bronchitis. If the latter condition develops, the worker will probably have to cease work, and will not come under treatment in the factory.

in the case of older employees, who may be referred for treatment by their own medical adviser.

Allergies.

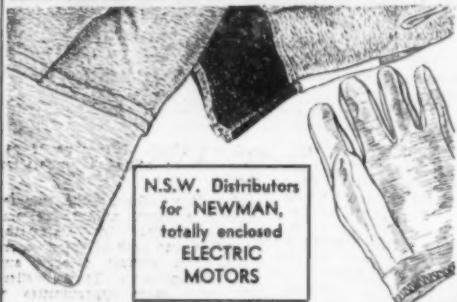
Hypertrophic rhinitis.—It is extremely rare to find a perfect nasopharynx, anatomically and physiologically. This is not surprising, since the nasal passages have to contend with such extremes of temperature, and with exposure to dust-laden and germ-contaminated atmosphere. It is remarkable that it adapts itself so well.

Asthma.—In certain workers, an attack of asthma may be precipitated by almost any inhaled irritant or ingested protein, and it is a common experience to find attacks coming on suddenly during working hours in an otherwise nor-



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(Continued from page 49.)

Penicillin.

This antibiotic has made a very great contribution in reducing lost working time in industry. It is particularly suitable for ambulatory treatment, rarely produces a reaction and, in carefully chosen conditions, is specific. It is well adapted for use in inhalation therapy, for solutions of various strengths in normal saline solution are easily prepared.

It is not possible in industrial practice to make a routine bacteriological examination of the respiratory tract, but clinical experience is the best guide for the selection of suitable cases.

In an attempt to limit the number of acute coryza cases, workers have been encouraged to come for treatment as soon as symptoms of a cold appear. It is important to commence on the first or, at least, the second day. Penicillin (crystalline) (50,000 units in 5 millilitres of normal saline solution) was given in the form of an aerosol, twice a day, and continued for 3-4 days. In the majority of cases, secondary infection was prevented and complications were absent. The important point seemed to be to continue treatment for at least a day after all symptoms had subsided.

Penicillin with ephedrine or adrenaline.

Penicillin alone was regarded as the "standard treatment" but, in colds with nasal obstruction, ephedrine (1 per cent. in normal saline solution) was added, decongesting the nasal mucosa and making possible the more thorough inhalation of the aerosol. In the younger age-groups, a solution of adrenaline (1 millilitre of a 1 in 1,000 solution) was sometimes substituted to produce the same effect. It was thought best to avoid adrenaline for patients who showed a blood pressure above normal. Sometimes glycerine or thymol was used as a basis, instead of normal saline solution, in cases with accompanying "sore throats".

Penicillin and the sulphonamides.

Soluble sulphacetamide in 10 per cent. solution was chosen as a suitable medication in combination with penicillin, because of its low toxicity. It was used in the form of Albucid Nasopharyngeal Solution.

In the secondary infection following acute coryza, this solution was used with the objects of preventing extension to the lower respiratory tract and of relieving the symptoms. Experience showed that in a proportion of the patients treated the mucopurulent stage was shortened. Fewer opportunities for treating this type of case were given, because the tendency was for workers to remain away from work or to be sent home if the temperature was above normal.

In winter some employees, when they return to work, on examination are found to have clinical signs of catarrh in the chest. These cases are well suited for penicillin and sulphacetamide inhalation. In a few cases treatment had to be

discontinued because of sensitization in the form of a generalized erythema. In one case it was thought to occur as the result of a course of parenteral procaine penicillin. It is suggested that the inhalation of graduated doses of penicillin might be a convenient method of desensitization.

Adrenergic Drugs.

These substances are used for their power in relieving spasm of unstripped muscle. Hence their value in asthma and broncho-spasm. In the present series of cases, adrenaline was used for its decongestive effect, because continuous asthma is scarcely compatible with employment. In latent hypertrophy of the turbinal bones without gross deformity of the nasal anatomy, and in the absence of nasal polyp, much benefit was derived, workers becoming able to breathe through the nose and therefore having a better chance of escape from more serious respiratory trouble.

It is worthy of mention that, in all forms of inhalation therapy, patients are made conscious of the automatic act of breathing, and treatment may be regarded in the light of a lesson in breathing exercise. This is likely to be of value for asthmatic subjects, in whom it is agreed that there are frequently faulty breathing habits.

Histamine antagonists.

A wide field has been opened up by the introduction of antihistamine drugs, since rhinitis is now being regarded in some quarters as an allergic condition. If this is so, then some benefit may be derived from the topical application of an antihistamine compound in the form of an aerosol, in addition to a suitable dosage by the mouth. The factory medical department seems to be the ideal place to make this investigation. It is suggested that urticaria and angioneurotic oedema might respond to this form of treatment, as, indeed, it did in one case of the present series.

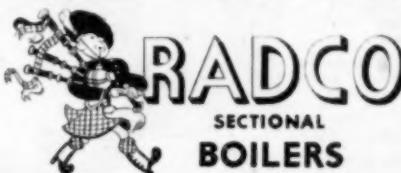
CONCLUSIONS.

It is clear that inhalation therapy is well suited to factory practice, especially if given in the form of an aerosol. Its chief aim is prevention in the first place, and so it can make a positive contribution to production.

Inhalation therapy enables some employees to continue at work, by treating sub-acute disabilities which would otherwise incapacitate them. In addition, there is ample opportunity of assessing the value of the many new substances now becoming available, which are designed for respiratory medication, and which may replace, in time, the era of the "cough bottle" and the poultice. It has, at least, the merit of tackling the problem in a rational way.

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Synthetic Mica

(Continued from page 48.)

materials used in the crucible lining. Ceramic linings are badly corroded by a fluorine-bearing melt. Carbon and silicon carbide crucibles are somewhat better, but fluorine gases escape through the relatively porous walls, and fine carbon particles become embedded throughout the synthesised mica. Crucibles lined with platinum foil give the best results. They do not react with the melt and are able to withstand high temperature for long periods. Although initial cost is high, the platinum linings may be melted down and re-formed again and again.

The shape of the crucible is also important in mica synthesis. Flat-bottomed crucibles are undesirable because they offer a large surface for the formation of many seed crystals which grow independently in different directions and thus limit the development of single large crystals. Mica has a sheet-like structure and grows faster in a direction parallel to its cleavage plane than in any other direction. Consequently, if a crucible with a cone-shaped bottom is used, the number of seed crystals is reduced and the direction of growth tends to be upward. Experiments are now in progress to find ways of predetermining crystal growth even more completely in order to grow large parallel sheets. The key to this seems to be precise control of temperature differences within the crucible.

Flakes of the synthetic mica made at the National Bureau of Standards are examined under a binocular microscope to locate any structural defects (Fig. 4). Impurities, gas bubbles, faulty orientation, and incomplete crystallisation are revealed by this method. Clear crystals are selected for further analysis.

Mica's remarkable properties as an electrical insulator have made it invaluable to electrical and electronics industries. The United States is the world's largest consumer of natural mica, but it produces only enough to meet a third of its requirements.

Since the war, world production of natural sheet mica has declined sharply, while production of ground mica has shown a continuing rise to meet the needs of roofing, paint, and rubber industries. The drop in sheet mica output reflects not only decreasing military demands for high-grade mica but also increasing labour costs which make hand-processing unprofitable. The usable sheet product is only a small fraction of the total processed volume. Some foreign countries can still process natural mica cheaply by hand methods, but producers in the United States are now concentrating on the production of "half-trim" mica.

Successful control of crystal orientation in the growth of synthetic mica would mean that machine methods could be used for large-scale domestic production of sheet mica. In this way mica synthesis could make the United States self-sufficient in high-grade mica insulating materials.

MALAYA WANTS AUSTRALIAN MACHINERY.

Australian manufacturers of canning and fruit-cutting equipment are deeply interested in the survey of Australian canneries to be conducted this month by a group of Malayan pineapple packers. Object of the survey is to investigate the possibility of securing from this country such machinery as will make possible the complete mechanisation of fruit-cutting and processing in Malayan factories. It has been estimated that approximately £A142,850 will finally be expended on the requisite plant.



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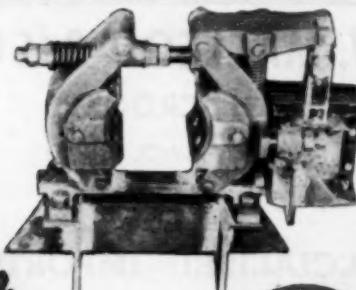
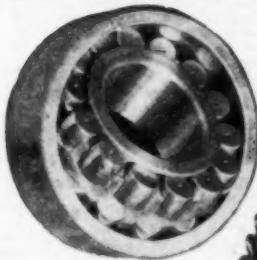
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Phenolic-Sand Foundry Moulds

New process for producing metal casting moulds and cores

Experts have estimated that a new use for phenolic resins will, in the future, consume a tonnage of resin greater than any other single application in commercial use to-day. The field which holds this important implication to the manufacturers of phenolics—and to the metal casting industry—is that of producing sand moulds and cores which are used in foundries.

Basic work on this new process was done in Germany during World War II. First technical details for publication were obtained, it is said, when William W. McCulloch, Technical Industrial Intelligence Div., U. S. Dept. of Commerce, interviewed Johann Croning in Hamburg during 1945. The object was to obtain information on the materials and technique of the so-called "C" process of precision moulding invented by Herr Croning and developed by Croning & Co. Essentially this method consists of producing a comparatively thin shell-like metal-casting mould by applying a mixture of sand and a phenolic binder to a hot metal pattern and curing the layer of material.

WITH this technical information available, many foundries, as well as all of the larger manufacturers of phenolic materials, have since been hard at work developing and refining the materials and technique of this newly created method of sand mould production.

It has been announced that applications for patents applying to various aspects of this process have been made.

ADVANTAGES

Reports on experimental work done to date says an article in "Modern Plastics," indicate that

the "C" process possesses the following advantages:—

Moulds are dry and porous, permitting quick elimination of gases; no back pressure is built up.

Very accurate dimensions are obtained; tolerances of a few thousandths of an inch are possible.

Sections as thin as 0.010 in. can be cast accurately.

Very smooth surfaces can be obtained on cast pieces, and considerable machining is eliminated.

Fewer surface defects and smoother surfaces result in stronger castings, allowing thinner sections.

Uniformity of resin-sand mix in moulds eliminates rejects caused by variations in moisture and clay content in usual moulding sand.

Cleanings of castings is minimized and shot blasting practically eliminated.

Some parts which formerly had to be made in two or more pieces to allow for machining may be made in one piece because of the reduction in the amount of machining needed.

Saving of metal by elimination of risers, by more efficient coring, etc., results in a much higher yield from metal used than customary.

Contamination of surfaces of casting is held to a minimum.

Inexpensive equipment is used in making the moulds.

More moulds per day can be made with the same labour and space than by usual methods.

Handling of sand is greatly reduced; only about 8 per cent. of the usual amount of sand is used.

Handling and storage of flasks are eliminated.

Unskilled labour can be used for making the precision moulds.

Moulds have no affinity for water and hence may be stored indefinitely.

Cores being hollow and dry allow quick escape of gases; also, they collapse readily.

More castings per unit of floor space can be poured at one time because moulds are smaller and are poured in upright position.

FOR CASTING SMALL PARTS

Despite all of the advantages listed, present experimental work with this process indicates that it will not be economical for use in producing very large castings. Its greatest use appears to be limited to the production of relatively small parts. However, so vast is even this limited field that the large phenolic manufacturers are to-day spending much money for development and promotion.

In fact, several companies exhibited details of this process at the 1950 Foundry Show in Cleveland, U.S.A. Two of them—Bakelite Div., Union Carbide & Carbon Corp., and Borden Co., Chemical Div.—had actual operating exhibits where these special sand

moulds were produced, and metal was cast in them.

Bakelite's demonstration equipment included a dry blower for thorough mixing of the resin and sand, a cast-iron pattern which was used for producing the half moulds, a mould machine for application of the resin and sand mixture to the hot pattern, an oven for heating the pattern and curing the moulds, a strip table for removing the finished mould from the pattern, and an electrical furnace for melting and pouring the silicon alloy of aluminium.

In producing moulds with this equipment at the Foundry Show the operator clamped the heated metal pattern to the top of the mould machine which contained a quantity of the resin-sand mixture. This mould machine was mounted so that it could be inverted, thereby causing the resin-sand mixture to fall onto the surface of the heated pattern. After sufficient time elapsed to permit a suitable thickness of resin-sand material to fuse together on the hot mould surface, the mould machine was returned to its upright position and the remaining loose resin-sand mixture fell to the bottom. The clamps were then loosened, and the hot pattern with the shell-type sand mould adhering to it was removed and placed in an oven. The pattern and mould remained in the oven until the resin-sand mixture hardened, after which the thin mould was removed from the pattern. Two halves of the mould produced in this manner were clamped together.

The parts of the mould were held tightly and uniformly in position by placing the clamped mould in a mould box with gate uppermost. Metal shot was then poured into the mould box, outside the mould, to maintain the mould halves in alignment and to facilitate dispersion of the heat given off by the molten metal poured into the mould from the furnace. Sufficient metal shot was used to fill the mould box almost to the top of the mould.

SPECIFIC RECOMMENDATIONS
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to a number of engineering reports which are essentially recommendations for procedure. The remainder of the article in "Modern Plastics" is in the nature of separate reports based on information supplied by Borden Co., Chemical Div.; Durex Plastics & Chemicals, Inc.; and Monsanto Chemical Co. The techniques thus far developed, as reported here, are basically similar; however, they are presented at some length, despite apparent repetition, because of significant and important differences in detail.

The Borden procedure involves the use of heated metal patterns containing sprues, runners, and gates. The pattern, heated to 400 to 450° F., is secured to one end of a resin-sand reservoir and the entire assembly inverted. The mixture of resin and sand falls against the pattern, the heat from which causes the resin to flow momentarily and then partially cure around the sand next to the pattern. A shell structure approximately $\frac{1}{8}$ in. thick is formed within 4 to 6 seconds. At the end of this time the assembly is returned to the upright position, permitting loose and uncured resin-sand mix-

ture to fall away from the shell. This unused mixture is then ready for making the next mould.

CURING THE SHELL.

The pattern with the partially cured shell attached is immediately placed in an oven for the final cure at 500 to 550 deg. F. Curing requires 3½ to 4 minutes. The mould is now ready for use or can be stored indefinitely.

Borden Co. recommends resins which have been specifically formulated for this application. According to Borden, these resins differ primarily in speed of cure and are characterized by good workability; they mix readily with sand. Cure takes place rapidly at temperatures below 550 deg. F.; sand grains are bonded with the desired strength, retaining excellent permeability and imparting good surface smoothness, outstanding definition, and trueness to pattern.

Borden also states that dimensional stability of cured mould surfaces can be relied upon. The application efficiency of these resins is such that it is seldom necessary to use a concentration of binder in excess of 8 per cent. by weight of the sand.

The sand should be washed and dried silica sand, free of clay, metal oxides, and organic matter. It should be of an AFS fineness ranging between 110 and 140. No water is used.

Mixing should be thorough to accomplish complete dispersion of resin throughout the sand. Conventional milling equipment, paddle mixers, counter-rotating ribbon mixers, and tumblers are considered satisfactory.

The present experience of Borden indicates that aluminium and polished grey iron make the best pattern materials because of the ease with which the cured face strips from them.

The most effective release agents found to date are the Dow-Corning silicones. A suggested proportion is 10 per cent. of DC-7 dissolved in carbon tetrachloride. Other release agents are being investigated and work is under way to develop new parting materials.

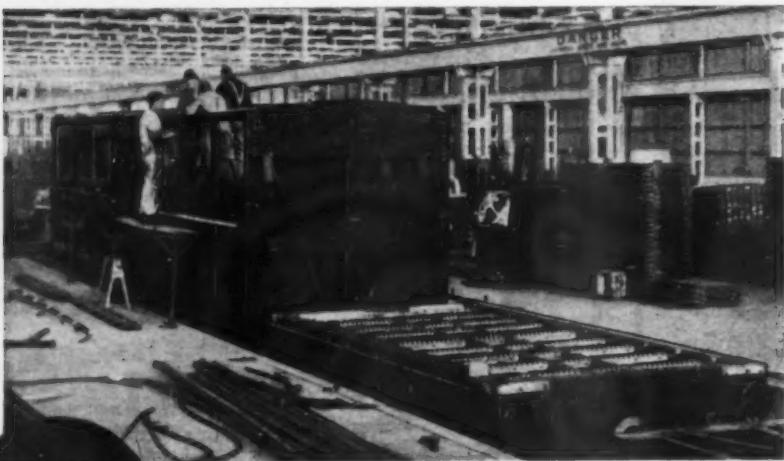
Borden is still concentrating its efforts on experimental work in connection with the "C" process, and especially on the phenolic formulations. Although this work is not yet complete, it has become apparent that different phenolic formulations will prob-

ably be required for moulds for casting different metals.

CAST IRON PATTERNS.

In the recommendations made by Durex, for satisfactory operation of the "C" process, it is suggested that the pattern should be made of cast iron with a smooth finish. It should be hollow with a uniform section of about 9/16 inch. The plate on which the pattern is mounted should also be of cast iron with a uniform 9/16 in. thickness. The plate should contain knock-out pins, preferably mounted on a push plate for removal of the cured mould. A very smooth surface on the plate is important for easy removal of the mould. The uniform thickness of metal is necessary for uniform heating and conducting heat to the resin-sand mix in order to build up a mould of uniform thickness. Gates and runners should be mounted permanently along with the half pattern on the plate.

It is necessary to lubricate the patterns to prevent sticking of the resin-sand mould. Durex recommends a dilute solution of silicone mould-release fluid. This should be sprayed on the cold pattern



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8 ACRES OF PLANT AND TECHNICAL RESOURCES

and then applied to the hot pattern at intervals as may be necessary.

A conventional muller-type foundry mixer may be used to mix the sand and resin, but a tumbling-type mixer is preferred since it has less tendency to break down the sand.

The dump box for holding the resin-sand mixture and bringing it into contact with the hot metal pattern should be arranged for quick inversion. Dures has found that the box should be big enough to hold 40 to 80 lb. of the mix and have sufficient head space to allow the mix to fall about one foot before contacting the pattern. The weight of the mix and the effect of the fall ensure good contact with the hot metal pattern.

A gas fired oven is desirable for quick heating of patterns. It should be large enough to hold several patterns of the largest size that will be used. It must be capable of maintaining a uniform temperature of 650 deg. F. and have suitable temperature control adjustments. Baffles in the bottom are desirable to prevent over-heating of any part of the plate or pattern.

SATISFACTORY RESINS.

Several types of satisfactory powdered resins are available, and choice depends on the type of mould and the metal to be poured into it. This can best be determined by trial. A wetting agent helps to make a more uniform mix. Such an agent also prevents segregation of sand and resin, as the mix is handled and used. A special wetting agent that mixes easily and gives optimum results in this phase of the operation has been developed.

The sand should be free of clay, metal oxides, moisture, organic matter, and findings. Round sand of uniform particle size is preferable. In general, fine sands can be used for bronze and aluminium; coarser sand is preferable for steel, as this gives greater porosity for quicker elimination of gases. Finish can be improved by adding small percentages of certain finely ground inorganic fillers, but too much will reduce porosity. The proportions of sand and resin are dependent on results desired. Higher resin content will produce a smoother and more accurate mould and casting.

MOULD MAKING.

In making moulds, the resin-sand mix is prepared by mixing 100 lb. of sand with 1 lb. of wetting agent, preferably in a tumbling-type mixer, for 3 minutes. From 6 to 10 lb. of powdered resin is then added and mixed thoroughly (2 to 3 minutes). Mix must be free flowing and free from lumps.

The pattern plate is placed in the oven at 650 deg. F. until it has reached 550 deg. F.; approximately 2 to 3 minutes should be sufficient for this step.

The pattern plate is clamped on top of the dump box. The box is then inverted quickly, and the mix is allowed to contact the hot pattern until a desired mould thickness is built up. The longer

the contact the greater the thickness. A thickness of about $\frac{1}{8}$ in. is generally satisfactory. If the pattern is hot enough, this should build up in 3 to 6 seconds. The resin fluxes from the heat of the pattern and bonds the sand, but is not thoroughly cured until the pattern plate with mould attached is placed in an oven at 650 deg. F. for 2 to 3 minutes. The time in the oven must be sufficient to cure the resin and also to raise the pattern to the original temperature. If the pattern is not hot enough the build-up of mould on pattern in the next cycle will not be as thick for same period of inverted dump box time. Dureg indicates that it is preferable to undercure moulds for use on steel and overcure those for use on bronze and aluminium for proper breakdown of the resin when the castings are poured.

The two halves of the mould must be held together during the pouring of the metal. Cores are assembled in the mould in the usual way. By proper design they can be used to assure accurate alignment of the two mould halves because of the accuracy of both mould and core when made by this method. For casting aluminium, merely clamping the two halves together is generally satisfactory. For heavier metals, the two halves are placed in a box surrounded by steel shot.

POURING METAL

The mould is poured in an upright position, contrary to usual foundry practice. Air and gases escape readily through the mould and, of course, no troublesome moisture is given off by the mould. Care should be taken to avoid turbulence of the metal during the pouring, as too much turbulence may remove some of the sand from the mould surface. The quick escape of air and gases eliminates any possibility of back pressure and results in a solid, dense structure comparatively free from porosity and defects. It is generally better to pour metal on the low side of the usual temperature range.

LARGE VOLUME CASTINGS.

Monsanto Chemical Co. sees the "C" process as especially adaptable to high-volume, small-size casting production, where a large quantity of different patterns will not be required. A steel pattern is recommended for long runs, especially if close tolerances are required on the cast parts. Cored patterns will be satisfactory for some parts, although it is necessary to design such patterns carefully in order to get uniform heat transfer. One possible difficulty with thin-cored patterns is that close tolerances may be difficult to hold in the pattern. In Monsanto's experimental work, it has become apparent that a new "shrinkage rule" must be developed since different sections of the cast pattern may shrink by different amounts.

Monsanto states that some work has been done with patterns which are self-heated by means of electrical heating elements buried

(Turn to page 58.)

It took experience, time, labour and material to produce this piece of "Scrap" — good for nothing except salvage, because the operator made the hole a little too large. Whose fault? The clerk who misread a 3 for a 5 — or the management who are trying to control modern production with out-of-date methods? Your production control methods must be mechanised if you are to save these human errors, delays, losses and eliminate copying and recopying of essential information from one docket to another. Remember, repetitive writing is a potential error-making occasion. Mechanisation will also save expensive clerical labour to-day. It can give you automatic control and speed vital production data through every step in manufacture. Are you thinking of Incentive Schemes? This system can show you how to apply them.

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(Continued from page 57.) directly in the pattern body. The temperatures of such patterns are thermostatically controlled. All patterns must be lubricated; according to Monsanto, silicone grease DC-7 dissolved in methyl ethyl ketone to a solids content of approximately 14 per cent. has been satisfactory. This lubricant may be wiped or sprayed on the pattern when either hot or cold.

Work has been done on two types of sand-resin mixes; one makes use of a dry resin and the second a combination of liquid and dry resin. The all-dry resin appears to have the advantage of longer life of mix stability, while the dry-liquid mix appears to do a satisfactory job with a lower resin content. At the present, it appears that no more than 2 hours should elapse between the time of preparing the dry-liquid mix and the time of use.

The mixing operation when dry resin is used does not appear to offer any difficulties. Standard mixing equipment will do a satisfactory job in from 3 to 5 minutes. In the case of the dry-liquid mix, however, it is recommended that a vanned tumble mixer be used and that the liquid component of the combination be mixed with the sand for from 3 to 5 minutes; the dry resin is then added and the tumbling continued for an additional 5 to 6 minutes. In the case of the dry-liquid mix, a total resin content of 6 per cent. is recommended, 10 per cent. maximum of which should be liquid resin and 90 per cent. dry.

If the metal pattern is self-heated by electrical means, the thermostat should be set between 400 to 500 deg. F., according to the type of resin used. If an oven is used it should be heated to approximately the same temperature, but the oven should be so located that a minimum of time will elapse between removal of the pattern from the oven and the application of the resin-sand mixture. Most work has been done with the invertible mould box mentioned previously.

CONTINUOUS FLOW OF MIX.
A different method of applying the resin-sand mix to the pattern appears to offer great possibilities. By this method, a continuous flow of resin-sand mix would be uniformly and continuously fed to the heated pattern until the required thickness had been built up. There are still mechanical problems to be solved for such a set-up, but it appears to offer great possibilities for a foundry producing many pieces.

Monsanto recommends that mould thicknesses be no less than 1 in. and no greater than 8 in. Company experience to date indicates that moulds thinner than 1 in. will not produce accurate



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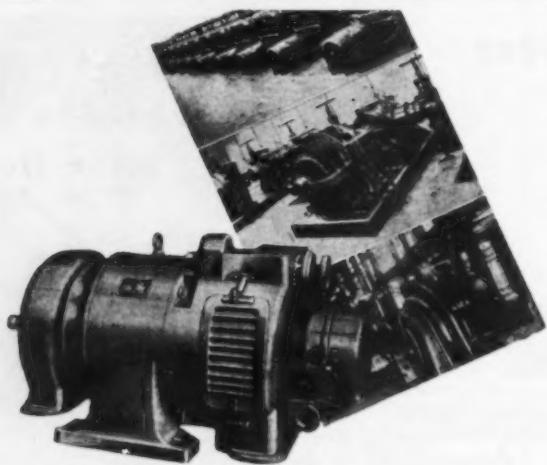
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castings. Such thicknesses will be built up on the hot pattern in from 6 to 15 seconds. If the metal patterns are self-heated the moulds may be cured without the use of an oven, simply by permitting the mould to remain on the hot pattern for a sufficient length of time to effect a complete cure.

This method of cure, however, requires a longer time than oven curing because heat is applied to the mould from one side only.

Experimental work on mould cure has been done by Monsanto, in which the uncured mould is stripped from the pattern and placed in an oven. This method

of operation would speed up mould production and reduce the number of patterns required for large scale production. However, the problem of warpage has been encountered, and until this difficulty is overcome, stripped-mould curing is not recommended. In any case, the time for oven cure is



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from 3 to 4 minutes, with an oven temperature of 600 deg. F.

The methods for clamping the mould halves and pouring the metal are similar to the ones previously discussed, although Monsanto indicates that some other more satisfactory methods may soon be developed. The company does not believe that the sand used for the moulds can be reclaimed without very expensive reclaiming equipment. And it also foresees that special resins must be developed to produce moulds for different metals.

S.A. PUMP WILL HELP STOP FIRES.

A new high-pressure pump which is expected to facilitate fire-fighting is going into production in Adelaide. Designed and produced by Mr. A. J. Northey, of Northey Rotary Machines Ltd., Brompton, it will pump water at very high pressure.

Mr. Northey said most fire hoses expelled water at a pressure of 100 to 150 lb. a square inch. The

new pump was capable of 250 lb. a square inch.

Mr. Northey said he spent about eight years developing the pump. Most of his work was in England. He had only been in business in Adelaide about four months. Sydney Metropolitan Fire Brigade was interested in the pump, but had not seen it demonstrated.

The pump varied in size from 1 in. to 2½ in. The smaller pumps were suitable for fruit tree spraying and irrigation.

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Australian Business Must Wake Up

(By Clifford Buckley, F.C.C.A., Deputy Tea Commissioner for Australia.)

Continued apathy on the part of private enterprise, will eventually result in socialist control of industry.

Most businessmen get hot under the collar when nationalisation of industry is mentioned. Yet they behave as though they want to lose control of their businesses. They allow socialists and communists to blackguard the capitalistic system and, so long as their own company is not specifically referred to, they do nothing to counter the damaging propaganda.

At the present time, profits are big and there is little or no difficulty in selling all the factory output. Why should management worry when business is so good and dividends higher than ever?

A little thought will make it obvious that continuous publication of big profits, high dividend rates, bonus share issues, rising prices and increasing shortages, have an adverse effect on public opinion and support the demand for more government control. Letters to the editors of our daily papers more frequently urge nationalisation of those industries which are considered to have offended most.

This is the thin edge of the wedge and the "Welfare State", with everyone working for the government and strictly regulated, must follow, unless the case for private enterprise is presented to the public by individual companies and by industry as a whole. The matter is now urgent. Time is running out.

The handicaps under which the case for capitalism has to start, are numerous. Although many benefits from the present system have accrued to the public in all English-speaking countries, these benefits are never stressed; only the failures and unpleasant items are remembered. The fault lies with business itself—both large and small.

How does business stand in the eyes of the general public?

To start with, the record of modern industry from the last century to the present time, is very unsavoury. School children are taught that in the early days of industrialisation, conditions in factories were cruel in the extreme. Wealthy millowners worked their employees like slaves. Long hours, wages on which it was impossible to live, no amenities, and dismissals when sickness or old age reduced a man's capacity for work, were the rule.

World War I brought high profits, uncontrollable by government and made untold millionaires. The depression followed, when workers were allowed to starve, without

any thought or assistance from capitalists.

Through all this period, management refused to listen to requests from workers for better conditions, broke strikes by all possible means and fought bitterly all suggestions for improvement in working conditions and pay. Trade Unions were the workers only hope, and naturally, over the bitter years, a great deal of confidence was built into them. All organisations of industry, concerned themselves solely with trade agreements to raise prices, or to fight the workers, often just because they were workers and even when their requests were reasonable and their case a just one.

Gradually, government intervened to a greater extent and insisted through the Arbitration Court system, on minimum wages, based on the cost of living. All increases were fought by employers with all means at their disposal.

Thus has arisen the firm belief on the part of the public, that all benefits to workers in the way of better conditions, shorter hours and higher wages, have come from the Unions and the Government—not in any case, from industry, which pays those higher wages and stands the cost of improved working conditions. (I know that the public ultimately pays the bill but the employer hands the money to the worker).

Such then is the general opinion of the public to capitalism. The unions and the government are for the people; management is against them!

Now it is quite obvious that workers and employers have many interests in common. These include secure employment, good wages (which mean more spending), reasonable profits (which mean plant extensions and still more jobs), freedom from strikes and other similar items. It has been proved over and over again that progress is faster under private enterprise, production is more efficient, prices are lower and working conditions better. Unfortu-



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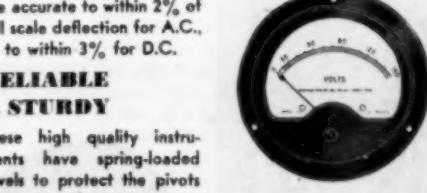
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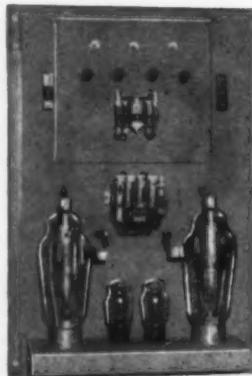
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nately, these common interests have become battlegrounds on which capital and labour fight each other, to the detriment of both.

What is the answer to this sorry state of affairs? The hour is late but the practice of sound public relations, if given an opportunity, may yet save the day. At best, if enough individual firms and industrial associations embark on a carefully considered plan of action, on a wide enough scale, a reversal of the present adverse public opinion may be effected. At worst, those firms who invest in such a programme will enjoy a higher standing with the public, a bigger demand for their wares, more contented staff, reduced labour turnover and a multitude of other advantages which will make the results appear to be little short of miraculous.

What is the modern conception of Public Relations?

For the answer to that question we must go to U.S.A., in which country, alone, the practice of this important and essential business function has been lifted out of the mistaken occupation of securing free publicity. It is not the job of merely getting free paragraphs in the press. Nor is it the publication of excuses for, or attempted justification of business mistakes.

It is, in the policy sense, a determination to conduct the affairs of the business on the basis of decency, and fairness, to all who come into contact with the organisation. These include employees, unions, customers, suppliers, State Government, Federal Government, local community, schools, churches and so on.

On the practical side, it is the carrying out of this pre-determined policy and the telling of it to the widest possible audience, through every possible channel.

Naturally, if the company is a "good citizen", a certain amount of value must follow but unless the full story is told over and over again, much benefit will be lost.

It follows that, as the public relations programme involves matters of company policy, the executive in charge of the job must be a director, or must be responsible only to the Managing Director.

As it is a fact that correct public relations technique can often prevent trouble arising, the public relations executive must have an opportunity of explaining the public relations aspect of every proposed change of policy or practice. It is always much easier to prevent a serious misunderstanding than correct it after some damage has been done.

One final word! Every person, company and organisation practices public relations whether they know it or not, for the term merely means what it says, i.e., relations with the public. The important point to consider is whether the public relations behaviour is good or bad, properly planned or haphazard.

The right time to start a sound and efficient public relations programme is **NOW**.

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BOWLS CARNIVAL VISITORS SEE PHILIPS' S.A. WORKS.

It would not be expected that the Australian bowling carnival held in Adelaide during February would be a topic for a paragraph in "The Australasian Manufacturer." But we could not resist writing a paragraph on the following letter from Mr. A. Thomas, public relations officer of the Hendon (S.A.) works of Philips Electrical Industries.

Mr. Thomas said: "I had a call from two Queensland bowlers, together with their wives. They were respectively Dr. J. E. Morris, doctor of medicine, of Newstead, Brisbane, and Mr. F. C. Clarke, a builder from the same district. They are staying at the Seaciff Hotel and were motoring along Tapley's Hill Road towards Port Adelaide when they came across Hendon Works. Mr. Clarke was impressed with the look of the factory and came over to the guard and asked if they could see the factory which they thought being Philips must make lamps.

The guard brought them over to me and I arranged a tour for them. All of them were absolutely delighted with their visit, which was so spontaneous. Mrs. Morris said that it was the most interesting factory she had ever seen. They had lunch with me in the canteen and Mr. Clarke was good enough to present me with the enamelled Queensland Bowling Association badge, and whilst this doesn't make me a member, they said they would be delighted to make me a member if I am ever in Queensland."

GEORGE KENT PRESS RELEASE.

Mr. G. P. Paterson, Manager of George Kent (Victoria) Pty. Ltd., has just returned from four months spent at the Luton works of George Kent Ltd., the measurement engineers. While he was there a three day sales conference was held. Agents and representatives from South Africa, Canada, Australia, and several European countries, and representatives from all parts of Great Britain, together with the Chairman and directors of George Kent Ltd., heard a series of lectures given by the sales director, and members of the Research and Development and Sales Departments. These lectures, which were followed by general discussions, enabled the outside sales organisation of the firm to obtain a thorough insight into the firm's new products both in production and in development stages, and gave an opportunity for all to gain a broader view of the direction of future sales policy. Mr. Paterson was impressed by the steady flow of recently invented instruments of advanced design which would be coming on the market during the coming months and years, giving fresh opportunities for sales development.

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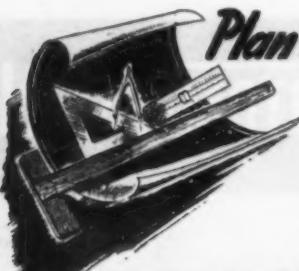
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PATENT & TRADE MARK NEWS

PATENT SPECIFICATIONS ACCEPTED

BENDING AND TEMPERING GLASS SHEETS.

138,721.—Filkington Bros. Ltd. Apparatus for bending and tempering a sheet of glass which has been heated up to near its softening temperature, characterised by two sets of tempering structures, each provided with shaping means for imparting a predetermined bend to a sheet of glass when disposed between them, said tempering structures being mounted for movement towards one another to effect bending by the shaping means and to be withdrawn from the glass after a bending operation to dispose the tempering structures so that quenching jets projected therefrom are given the desired distance of travel to the glass and tempering effected immediately after the bending operation, the glass remaining in the

position which it occupied during bending.

MACHINES FOR HEAT TREATMENT OF MATERIAL.

138,723.—W. W. Spooner.

An apparatus for the heat treatment of material in which streams of heating or cooling air or gas are impinged at high velocity upon material to be heated or cooled in a casing or chamber in which they are situated or through which they may be conveyed, characterised by the feature that baffle plates are provided spaced from the internal walls of the casing or chamber to provide a stagnant air space between them and the internal walls of the chamber.

IMPROVED LOGGING WINCH.

138,722.—E. Brockman and J. A. Brockman.

A logging winch comprising a housing adapted for attachment to the frame of a tractor or other power unit; a shaft for connection to a power take-off from the power unit; a driving gear wheel on the inner end of that shaft; a gear train within the housing to drive a rotatable drum

whereon a cable is adapted to be wound; a reversing mechanism incorporated in the gear train; a brake gear operatively connected to the winch drum; characterized in that the apparatus is so arranged and in that the housing is so constructed that the gearing is separated from the winch drum and the brake gear and the housing is adapted to contain a bath of lubricant whereby the gear trains may be continuously lubricated.

TRADE MARK APPLICATIONS

97,813. "Semak." Electrical machinery of all kinds and parts of such machinery.—Semak Electrical Pty. Limited, 573 Swanston Street, Carlton, Victoria.

98,255. "Eltron." Electro-medical apparatus and machinery.—Electronic Engineering and Service Co., 120 Carrington Road, Randwick, Sydney, New South Wales.

94,933. "Empicol." Detergents, foaming agents, wetting agents, emulsifiers, surface active agents and softening agents.—Marchon Products Limited, "Rystone", Holders Hill Crescent, Hendon, London, England.

98,161. "Deosan." Detergents and cleaning preparations.—Deosan Limited, 12 Brewery Road, London, N. England.

98,067. "Stabelastic." Torque transmission devices, flexible mountings and bearings, shock absorbers, flexible couplings.—Gordon McLean Stewart, 38 Shortland Avenue, Homebush, New South Wales.

93,124. "Cold Seal." Electric irons, kettles, immersion heaters, toasters, grillers, curling irons, coppers.—Dangar, Gedye & Malloch Ltd., 10-14 Young Street, Circular Quay, Sydney, New South Wales.

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Eng. Digi. — Fellow, Inst. Pat.

Att's Aust.

Club Chambers, 98 Phillip Street,
Sydney, N.S.W. Tel.: BW 4676.

96,303. "Dimco." Externally finned tubing of metal for refrigerator cooling coils and for other purposes.—R. Werner & Co. Proprietary Limited, 80 Burnley Street, Richmond, Victoria.

96,585. "Ardelec." Contact tips for electrical purposes.—Australian General Electric Proprietary Limited, 93-95 Clarence Street, Sydney, New South Wales.

95,146. "Plikington" Tiles (earthenware).—Plikington's Tiles Limited, Clifton Junction, Lancashire, England.

96,417. "Thermolox." High temperature refractory cements.—Nonporite Proprietary Limited, 292-296 Burwood Road, Hawthorn, Victoria.

96,758. "Tungelec." Contact tips for electrical purposes.—Australian General Electric Proprietary Limited, 93-95 Clarence Street, Sydney, New South Wales.

96,345. "Apollo." Wooden handles for axes, hammers, shovels and other such tools.—Hubert Alexander Block, Pascoe Street, Apollo Bay, Victoria.

95,453. "Revelos." Car polishing preparations.—Taubmans Limited, Mary Street, St. Peters, Sydney, New South Wales.

96,579. "Turnite." Flexible interlocking jointing made of plastic material.—Benjamin

TENDERS FOR PATENTS

NOTICE is hereby given that the owner of the under-mentioned Australian Patents is desirous of disposing of its rights in these inventions by way of licence or otherwise:—

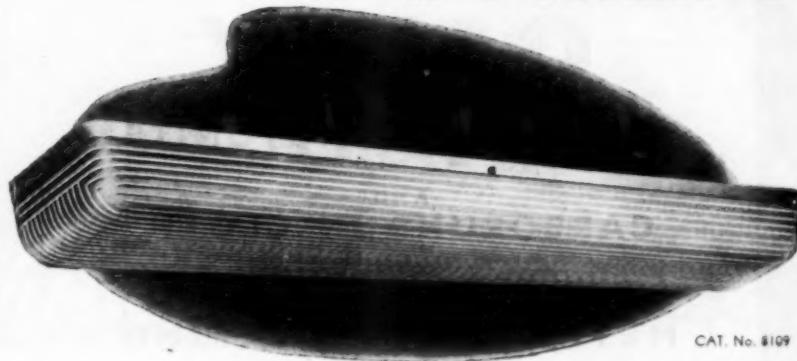
No. 102,999.—"Automatic Control Means for Electrically-driven Tools."

No. 103,715.—"Method of Photography for Use in Photocopying."

Further particulars will be supplied on application to

DAVIES & COLLISON, Fellows of the Institute of Patent Attorneys of Australia, Temple Court, 422 Collins Street, Melbourne, C.I.

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Horace Turner, 12 Ferdinand Street, Hunters Hill, Sydney, New South Wales.

95,139. "Durex." Electric or gas kettles, urns, soap dishes, bath curtain rails, towel rails, wash boilers, toasters.—Leslie

Henry Longhurst, 73 Railway Parade, Mortdale, New South Wales.

96,638. "Stormaster." Liquid fuel burning lamps.—Walter Leslie Houghton, 415 Bell Street, Preston, Victoria.

96,634. "Solar." Cement.—Louis Edward Bernasconi, 295 Collins Street, Melbourne, Victoria.

96,117. "Magictape." Magnetic recording devices.—Pyrox Limited, corner of Queensberry and Drummond Streets, Melbourne, N.S.W., Victoria.

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**"GOVERNOR CONTROL MEANS
FOR PRIME MOVERS."**

NOTICE is hereby given that the owner of Australian Letters Patent No. 124,822, dated the 21st May, 1943, is desirous of disposing of its rights in this invention by way of licence or otherwise.

Further particulars will be supplied on application to

DAVIES & COLLISON, Fellows of the Institute of Patent Attorneys of Australia, Temple Court, 422 Collins Street, Melbourne, C.I.

**"METHOD AND MEANS FOR
IRRADIATING BLOOD."**

The proprietors of Commonwealth Patent No. 118,711, are prepared to negotiate for the sale of their rights in the above, or for the granting of a licence to make, use and vend the invention within the Commonwealth of Australia. Particulars obtainable from **GRIFFITH, HASSEL & GRIFFITH, Patent Attorneys**, of 67 York Street, Sydney, N.S.W.

**"A PROCESS FOR PRODUCING
SULPHUR."**

The proprietors of Commonwealth Patent No. 136,379, are prepared to negotiate for the sale of their rights in the above, or for the granting of a licence to make, use and vend the invention within the Commonwealth of Australia. Particulars obtainable from **GRIFFITH, HASSEL & GRIFFITH, Patent Attorneys**, of 67 York Street, Sydney, N.S.W.

**"BOTTOM PLATE FOR MULLING
APPARATUS."**

The proprietors of Commonwealth Patent No. 119,910, are prepared to negotiate for the sale of their rights in the above, or for the granting of a licence to make, use and vend the invention within the Commonwealth of Australia. Particulars obtainable from **GRIFFITH, HASSEL & GRIFFITH, Patent Attorneys**, of 67 York Street, Sydney, N.S.W.

**"MULLING APPARATUS WITH
RUBBER LINING."**

The proprietors of Commonwealth Patent No. 119,893, are prepared to negotiate for the sale of their rights in the above, or for the granting of a licence to make, use and vend the invention within the Commonwealth of Australia. Particulars obtainable from **GRIFFITH, HASSEL & GRIFFITH, Patent Attorneys**, of 67 York Street, Sydney, N.S.W.

**"FRUIT JUICE EXTRACTING
MACHINE."**

The proprietors of Commonwealth Patent No. 130,083, are prepared to negotiate for the sale of their rights in the above, or for the granting of a licence to make, use and vend the invention within the Commonwealth of Australia. Particulars obtainable from **GRIFFITH, HASSEL & GRIFFITH, Patent Attorneys**, of 67 York Street, Sydney, N.S.W.

**"RECEPTACLE FOR MULLING
APPARATUS."**

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**"MACHINE FOR GRADING
EGGS BY WEIGHT."**

The proprietors of Commonwealth Patent No. 116,959, are prepared to negotiate for the sale of their rights in the above, or for the granting of a licence to make, use and vend the invention within the Commonwealth of Australia. Particulars obtainable from **GRIFFITH, HASSEL & GRIFFITH, Patent Attorneys**, of 67 York Street, Sydney, N.S.W.

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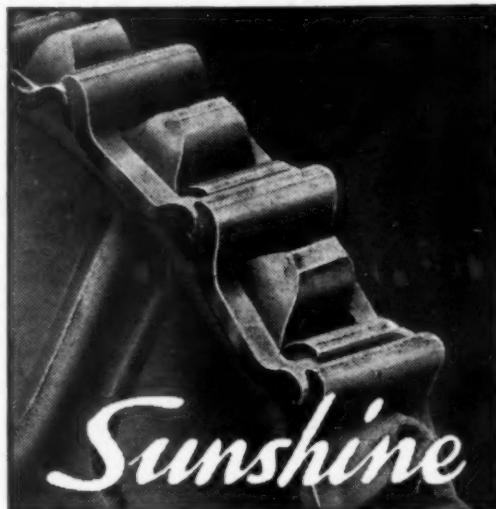
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TENDERS FOR PATENTS

"IMPROVEMENTS IN METHOD OF MAKING BONDED LAMINATED MICA INSULATION."

The proprietors of Commonwealth Patent No. 122,725, are prepared to negotiate for the sale of their rights in the above, or for the granting of a licence to make, use and vend the invention within the Commonwealth of Australia. Particulars obtainable from GRIFFITH, HASSEL & GRIFFITH, Patent Attorneys, of 67 York Street, Sydney, N.S.W.

"IMPROVEMENTS IN COMPOSITE BONDED SHEET INSULATING MATERIALS."

The proprietors of Commonwealth Patent No. 125,700, are prepared to negotiate for the sale of their rights in the above, or for the granting of a licence to make, use and vend the invention within the Commonwealth of Australia. Particulars obtainable from GRIFFITH, HASSEL & GRIFFITH, Patent Attorneys, of 67 York Street, Sydney, N.S.W.

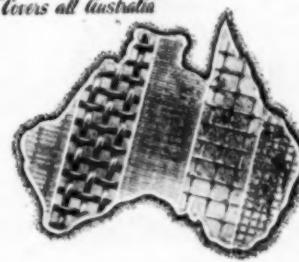
"PROCESS OF DISPERSING VAPOUR AND MATERIAL FOR THE SAME."

The proprietors of Commonwealth Patent No. 104,849, are prepared to negotiate for the sale of their rights in the above, or for the granting of a licence to make, use and vend the invention within the Commonwealth of Australia. Particulars obtainable from GRIFFITH, HASSEL & GRIFFITH, Patent Attorneys, of 67 York Street, Sydney, N.S.W.

"IMPROVEMENTS IN OR RELATING TO UNIVERSAL JOINTS."

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"IMPROVEMENTS IN SAFETY CONTROLS FOR GASEOUS FUEL BURNERS."

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"IMPROVEMENTS RELATING TO LIQUID ELEVATING APPARATUS."

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"IMPROVEMENTS IN SAFETY CONTROLS FOR GASEOUS FUEL BURNERS."

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"IMPROVEMENTS IN OR RELATING TO OPTICAL DEVICES, LIGHT-TRANSMITTING ARTICLES AND THE LIKE."

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TENDERS FOR PATENTS

"IMPROVEMENTS RELATING TO THE MAGNETIC SUSPENSION OF THE ROTOR OF AN ELECTRICITY METER, SMALL MOTOR OR THE LIKE."

The proprietors of Commonwealth Patent No. 122,508, are prepared to negotiate for the sale of their rights in the above, or for the granting of a licence to make, use and vend the invention within the Commonwealth of Australia. Particulars obtainable from **GRIFFITH, HASSEL & GRIFFITH, Patent Attorneys**, of 67 York Street, Sydney, N.S.W.

"THERMOSETTING RESIN-FORMING PROCESS."

The proprietors of Commonwealth Patent No. 124,983, are prepared to negotiate for the sale of their rights in the above, or for the granting of a licence to make, use and vend the invention within the Commonwealth of Australia. Particulars obtainable from **GRIFFITH, HASSEL & GRIFFITH, Patent Attorneys**, of 67 York Street, Sydney, N.S.W.

"SEAT COVER PACKAGE AND HOLDER."

The proprietors of Commonwealth Patent No. 122,553, are prepared to negotiate for the sale of their rights in the above, or for the granting of a licence to make, use and vend the invention within the Commonwealth of Australia. Particulars obtainable from **GRIFFITH, HASSEL & GRIFFITH, Patent Attorneys**, of 67 York Street, Sydney, N.S.W.

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The proprietors of Commonwealth Patent No. 127,280, are prepared to negotiate for the sale of their rights in the above, or for the granting of a licence to make, use and vend the invention within the Commonwealth of Australia. Particulars obtainable from **GRIFFITH, HASSEL & GRIFFITH, Patent Attorneys**, of 67 York Street, Sydney, N.S.W.

The proprietors of Commonwealth Patent No. 127,280, are prepared to negotiate for the sale of their rights in the above, or for the granting of a licence to make, use and vend the invention within the Commonwealth of Australia. Particulars obtainable from **GRIFFITH, HASSEL & GRIFFITH, Patent Attorneys**, of 67 York Street, Sydney, N.S.W.

"MECHANICAL COIN CHANGER."

The proprietors of Commonwealth Patent No. 119,532, are prepared to negotiate for the sale of their rights in the above, or for the granting of a licence to make, use and vend the invention within the Commonwealth of Australia. Particulars obtainable from **GRIFFITH, HASSEL & GRIFFITH, Patent Attorneys**, of 67 York Street, Sydney, N.S.W.

"BACK-FLOW PREVENTION APPARATUS."

The proprietors of Commonwealth Patent No. 123,127, are prepared to negotiate for the sale of their rights in the above, or for the granting of a licence to make, use and vend the invention within the Commonwealth of Australia. Particulars obtainable from **GRIFFITH, HASSEL & GRIFFITH, Patent Attorneys**, of 67 York Street, Sydney, N.S.W.

The proprietors of Commonwealth Patent No. 126,933, are prepared to negotiate for the sale of their rights in the above, or for the granting of a licence to make, use and vend the invention within the Commonwealth of Australia. Particulars obtainable from **GRIFFITH, HASSEL & GRIFFITH, Patent Attorneys**, of 67 York Street, Sydney, N.S.W.



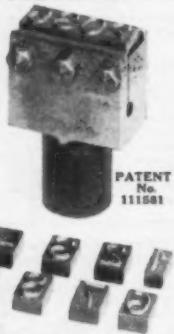
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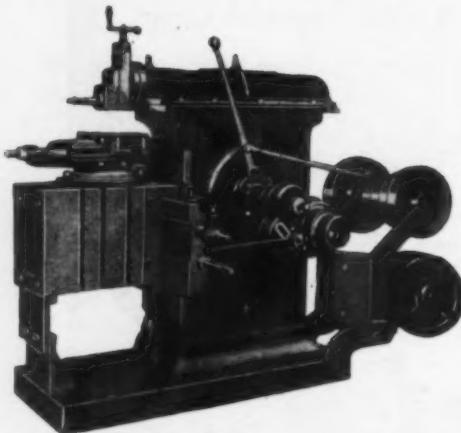
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Pipe Bushes and Ferrules (C. 6321/15.897). James Hardie & Co. Pty. Ltd. £580/8/4.

Conduits, E.W. and Concrete (C. 6150/15.908). William Redmond Agencies. £7,450/4/7.

DEPARTMENT OF CIVIL AVIATION.

Buzz Planers (Sch. 304). Charles Wolfenden & Co. £1,187/10/-.

V.H.F. F.M. Equipment (Sch. 243). Amalgamated Wireless (Australia) Ltd. £58,984/5/8; Pie Electronic Pty. Ltd. £7,266.

V.H.F., A.M./F.M. Receivers (Sch. 305). R. H. Cunningham Pty. Ltd. £2,346/2/10.

Radio Transformers and Chokes (Sch. 282). Red Line Equipment Pty. Ltd. £1,701/19/4; I. Brodribb, Electrical Engineer and Manufacturer, £1,241/18/2; Standard Tele-

(Turn to page 77.)



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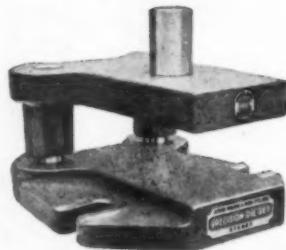
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(Continued from page 74)
phones & Cables Pty. Ltd., £159/6/9; and Amalgamated Wireless (Asia) Ltd., £136/19/4.

NEW SOUTH WALES

DEPARTMENT OF MAIN ROADS.

Sample Bags. Plastic Salvage, £125.

Concrete Pipes. Rocha Pipes Ltd., £70; Humes Ltd., £57/14/-; and Monier Pipe Co. Ltd., £77/8/-.

Hydraulic Jack. Joplin Bros. Pty. Ltd., £45/14/-.

Cardboard Dowel Caps. Safeway Containerers Pty. Ltd., £107.

Elevator Belting and Conveyor Belting. Dunlop Rubber (Aust.) Ltd., £52/10/5; The Goodyear Tyre & Rubber Co. (Aust.) Ltd., £108/18/10.

Roller Bearing Trolleys. William Adams & Co. Ltd., £70/12/-.

Drag Broom. E. Dixon and Co., £36/4/-.

Hurricane Lamps. W. Kopson & Co. Pty. Ltd., £171/15/-.

Welding of Mild Steel Rounds. A.R.C. Engineering & Co. Pty. Ltd., £227 3/11.

Blasting Mats. W. G. Bourke, £78/9/-.

Brass Metallic Hose Unions. Scrutons Pty. Ltd., £42.

Canvas Duck. R. H. Brett & Sons Pty. Ltd., £395/16/8.

METROPOLITAN WATER, SEWERAGE AND DRAINAGE BOARD.

Road tractor unit, two-axle, £3,475. Albion Motors (Overseas) Ltd.

Diesel alternator sets, three, 125 to 150 kW, £8,259. British Oil Engines Pty. Ltd.

Welding sets, engine driven, portable, six, £1,282 ea. Murex (Aust.) Pty. Ltd.

Steel silo, 820 tons cap., £8,429. Hume Steel Ltd.

Stop valves, retention valves, and spring hydrants, £30,196. Vandy Supply Co. Pty. Ltd.

Concrete skips, 30, £105 ea. N. P. Nielson & Co.

Structural steelwork, 6 tons, £972. K. D. Welding Company.

Structural steelwork, 14 tons, £231. K. D. Welding Co.

SYDNEY COUNTY COUNCIL.

Structural steel building framework for ash and dust plant building, Bunnerong "B" Power house, £27,029. Arcos Products Pty. Ltd.

Multi-core control cable, Items 1 and 2, £13,095. Enfield Cables (Aust.) Pty. Ltd.; Item 3, £816. Noyes Bros. (Sydney) Ltd.

Power transformers, 45 mVA, Homebush power station, £128,278. Hackbridge and Hewittic Electric Co. Ltd.

GOVERNMENT RAILWAYS DEPARTMENT.

Ash Handling Conveyer (Spec. 1271), for Ultimo Power Station. John Thomas (A.) Pty. Ltd., £43,912.

Escalators—15 Cleat Step, Reversible, for Redfern, Central, Town Hall and Martin Place (Spec. 1236). Otis Elevator Co. Pty. Ltd., £427,151.

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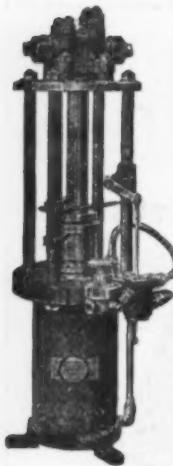
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CURRENT TENDERS

NEW TENDERS

The following tenders have been called since our last issue. Current tenders which have been published in previous issues follow this section.

COMMONWEALTH

POSTMASTER-GENERAL'S DEPARTMENT

F.M. Radio Link Equipment, Portable (Sch. C.6494). Extended to March 27.

Pneumatic Tube System (Sch. C.6516). May 22.

Work Shop Equipment (Sch. Q. 112). March 15.

DEPARTMENT OF CIVIL AVIATION

Crawier Type Tractors (Sch. 335). March 27.

Electron Tubes (Sch. 336). March 20.

Joint and Terminating Boxes, for Underground Cable (Sch. 331). March 13.

DEPARTMENT OF WORKS AND HOUSING

Automatic Voltage Regulator, Induction Type, for Gungahlin, A.C.T. April 3.

Precision Lathe and Attachments, for Repat. General Hospital, Concord (Quot. W.787). March 14.

Standard Steel Shelving, Supply and erect, at Balmain Wharf (Quot. 332). March 15.

GOVERNMENT RAILWAYS DEPARTMENT

Tent Flys. March 20.

Tin and Antimony. March 20.

SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION

Air Compressor, Two-stage, Air-cooled (Spec. 211). March 16.

Centrifugal Water Pumps (4), (Spec. 213). March 16.

Oil-fired Steam Boiler (Spec. 212). March 16.

STORES SUPPLY AND TENDER BOARD

Bicycle Tubes and Covers, Rims (Sch. C.T.B. 956). March 22.

Envelopes, for Note Printer (Sch. C.T.B. 958). March 29.

Postmen's Whistles (Sch. C.T.B. 955). March 29.

Reporters' Note Books (Sch. C.T.B. 957). March 29.

White Bond Paper (Sch. C.T.B. 954). March 15.

NEW SOUTH WALES

GOVERNMENT RAILWAYS DEPARTMENT

Aluminium Brass Tubes, 9 16 in. O.D. x 21 S.W.G. (CE-271). March 20.

Centrifugal Limit-Load Fan, 20 in. x 20 in.; Viscous OH Type Air Filters; Universal Type Regis-

ters, 24 in. x 8 in. (CE-10,237). March 29.

Steel Cabinets, for 8 in. x 6 in. and 10 in. x 8 in. Cards (CE-6381). March 13.

DEPARTMENT OF MAIN ROADS

Caravans (No. 39). March 15.

Electrically-operated Duplicator (No. 29). March 13.

Hydraulic Jacks (No. 31). March 13.

Steel Frames (No. 28). March 13.

DEPARTMENT OF PUBLIC WORKS

Electric Motor (35 to 40 h.p. 960 r.p.m.). March 14.

Lever Shearing Machine. March 16.

Pipe Cutters, etc. March 14.

Ruby Road Lamps, etc. March 14.

Rotary Drill. March 14.

Semi-portable Diesel Driven 50 K.V.A. Alternator Set. March 21.

(Turn to page 79.)

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NEW TENDERS — Contd.

DEPARTMENT OF SUPPLY.
Bunk Light Fittings and Lamps. March 20.

Educational Equipment (Ink, Maps, Paper, etc.). March 13.

Hair Mattresses, 100. March 13. Independent Bilge Pump. March 16.

Mattress Covers, 300. March 13. Paint Brushes. March 13. Standard Cases (220). March 13.

FORESTRY COMMISSION.
Electrician's Hole Cutting Saws. March 13.

Frequency Meter. March 13. Louvres. March 13. Radio Valves, VR150.30. March 13.

METROPOLITAN WATER, SEWERAGE AND DRAINAGE BOARD.

High Pressure Stop Valves (20 in., 18 in., 15 in., and 12 in.), and High Pressure Reflux Valve (15 in.). (Job 2486). March 27.

Low Pressure Stop Valves (3),

30 in., for Warragamba Pumping Station (Job 2489). April 3.

Pressure Reducing Valves (2), for Southern Towns Trunk Main Amplification (Job 2488). April 3.

STATE CONTRACTS CONTROL BOARD

Dust Fans. March 13.

Farm Tractor. March 12.

Film Projectors. March 12.

Football Bladders. March 12.

Galvanised Buckets. March 13.

Photographic Materials. March 14.

Radio Sets. March 12.

Scientific Apparatus. March 21.

Tools. March 12.

Vacuum Bottle Filling Machine. March 14.

Welding Machines. March 13.

SYDNEY COUNTY COUNCIL.

High and Low Voltage Varnished Cambrian Insulated Cables (Spec. 1537). April 5.

High Voltage, Paper Insulated Cables (Spec. 1548). April 5.

Metal Clad Switchgear (11,000 volt, 250 MVA), for Auburn Substation (Spec. 1544). May 31.

Multicore Control Cable, for Pyrmont "B" Power Station (Spec. 1539). April 5.

Tractor, 4-Wheel, for Marshallling Coal Trains at Pyrmont "B" Power Station (Spec. 1550). April 5.

MISCELLANEOUS.

Motor Lorries (2), 5-ton cap., fitted with 5 cub. yd. Tipping Body and Underbody Hydraulic Hoist;

VICTORIA

DEPARTMENT OF SUPPLY.
Combination Disc and Bobbin Sander. March 13.

Components, for Motors. March 15.

Cotton Duck. March 13.
Portable Motor Generators. March 15.

Tanks, Preservative and Phosphoric Acid. March 15.

GOVERNMENT RAILWAYS DEPARTMENT.
Diesel Travelling Cranes, 10-ton (Con. 58.665). Extended to April 11.

Greaseproof and Prussiate Paper and Paper Tape. March 14.

MELBOURNE AND METROPOLITAN BOARD OF WORKS.

Generating Set, 50 KVA. Diesel Engine-driven, complete with Electrical Starting Equipment, Switchgear and Voltage Regulator. March 13.

(Turn to page 81.)

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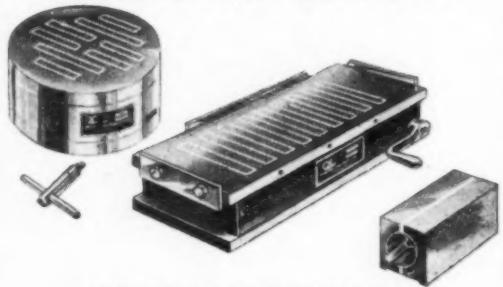
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NEW TENDERS - Contd.

STATE ELECTRICITY COMMISSION.

Fuses, Low Voltage (Spec. 50-51/253). Extended to April 18.
Horizontal Centrifugal Pumps, for Kiewa (Spec. 50-51/264). Extended to April 4.

QUEENSLAND

STATE ELECTRICITY COMMISSION.

Hard Drawn Bare Copper Cable (Spec. 284). April 11.
Outdoor Circuit Breakers, 66 kV. (Spec. 263). June 13.

WEST AUSTRALIA

GOVERNMENT TENDER BOARD.

Diesel Fuel Oil (Sch. 58A). March 15.
Industrial Trucks (Sch. 68A). April 19.
Saw Dust Separator (Sch. 69A). March 15.

CURRENT TENDERS

The following tenders have appeared in previous issues and are still current.

COMMONWEALTH

POSTMASTER-GENERAL'S DEPARTMENT.

Accumulator Plates and Separators (Sch. C.6523). March 15.
Apparatus Racks (Sch. N.S.W. 510). March 23.

Battery Cabinets and Spare Parts Cabinets (Sch. N.S.W. 509). March 23.

Cable Drum Trailers (Sch. C.6524). March 29.

Communication System between Sydney and Melbourne (Spec. C.6157). Extended to April 17, 1951.
Engine-driven Generators (Sch. C.6525). May 24.

Jugs, Mild Steel Plate (Sch. C.6513). March 15.

Ink Pads, Hand Postmarkers (Sch. C.6501). March 22.
Kerosene Heaters (Sch. V.459). March 20.

M.F. Broadcasting Transmitters and Associated Equipment (Sch. C.6598). May 3.

Medium Frequency Broadcasting Transmitters and Assorted Equipment (Sch. C.6496). May 3.

Physical Programme Line Equipment (Sch. C.6495). April 24.

Printed Forms, P.P. Series (Sch. C.6529). March 15.

Printed Publicity Matter (Sch. C.6526). March 8.

Printed Forms, Stores Branch Series (Sch. C.6530). March 20.

Relays, 3000 Type (Sch. C.6499). April 5.

Portable Air Compressors (Sch. C.6520). March 29.

Radio Transmission Line Switches (Sch. C.6488). April 19.

Tools, Leadworking and Measuring, etc. (Sch. C.6512). April 2.

Transformer Boxes (Sch. C.6517). March 22.

Wire, G.L. Steel Stranded (Sch. C.6519). April 5.

AUSTRALIAN ALUMINIUM PRODUCTION COMMISSION.

Copper Strip, various sizes, approx. 3*1*/₂ ton (Spec. E.37). April 2.

Electro - Magnetic Vibrating Feeders (5). (Spec. M.48). April 9.

Galvanised Steel Framed Windows and Louvres, etc. (Spec. C.10). March 12.

Laboratory Equipment, including 1*1*/₂ ton Crusher, 3 only Vacuum Pump Furnace, Copper Flasks, A periodic Refracting Balance, and Miscellaneous Items (Spec. M.44). March 12.

Roll Crusher and Plate Feeder (40 ton per hour), for Coal (Spec. M.46). April 2.

Special Duty Pumps and Priming Ejectors (2). 1,500-gallon, for Ash Sluicing (Spec. M.45). April 2.

Telpher and Grab, Supporting Steel Work, and Hopper, for Ash Removal (Spec. M.47). April 9.

DEPARTMENT OF CIVIL AVIATION.

Covers and Frames, C.L. for Cable Pit Manholes (Sch. 332). March 13.

Electrical Test Equipment (Sch. 330). April 10.

Insulated Copper Winding, Resistance and Fuse Wires (Sch. 326). April 8.

DEPARTMENT OF SUPPLY.

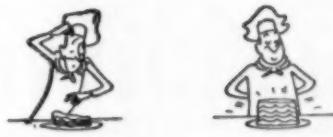
Clothes Wringers. March 15.

Phillipine Lighter (with or without refrigeration), Purchase from Garden Island. March 22.

(Turn to page 82.)



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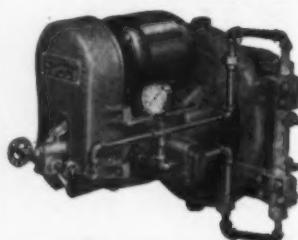
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CURRENT TENDERS — contd.

DEPARTMENT OF WORKS
AND HOUSING.

Automatic Control, for Heating
System, for G.P.O. Buildings, Ade-
laide. March 20.

Hot Water Supply Systems (2),
for Canberra. May 8.

Hydro Electric Generating
Plant, for Port Moresby. June 19.

Kitchen and other Cupboard Fil-
ments, for Stores Stock, Canberra.
March 13.

Economiser, Grit Arrestor, Ind-
uced Fan and Associated Flues,
Dampers, etc., for Ballarat. March
27.

Oil Fired Hot Water Heating
System, for Fishermen's Bend.
March 20.

Passenger-Bed Lift, for Canberra
Community Hospital. April 10.

Sewage Ejector, for Laverton.
March 13.

Switchgear—11 K.V. for Power
Station, Canberra. Mar. 13.

Tables (161), for Canberra.
March 13.

GOVERNMENT RAILWAYS
DEPARTMENT.

Diesel Engines and Centrifugal
Pumps. March 20.

Transformers. March 13.

STATES

NEW SOUTH WALES

GOVERNMENT RAILWAYS
DEPARTMENT.

Crane, $\frac{1}{2}$ ton, with Electric
Winch (Spec. CE-10,181). March
13.

Centre Lathes, Centre Height
8½ in. to 9 in. Sliding, Surfacing
and Screw-cutting Type (CE-
10139). April 2.

Circuit Breakers — High-speed,
1500-volt, Complete with Control
Equipment, for Western Main Line.
Supply of 165. (Spec. 1284). March
14.

Diesel or Petrol Overhead
Loaders, Crawler Mounted, cap.
bucket approx. $\frac{1}{2}$ cub. yd. (Spec.
CE-2657). March 21.

Diesel Truck Type Mobile
Cranes, 6-ton and 10-ton (Spec.
Nos. CE-2667 and CE-2668). March
21.

Diesel Mobile Cranes, 7-ton, with
Caterpillar Tracks (Spec. CE-
2669). March 21.

Electric Concrete Mixers, 1 cub.
yd. (CE-10155). April 3.

Electric Overhead Travelling
Crane, 15-ton, for Clyde Waggon
Works, Sydney (Spec. 540). April
4.

Electric Hoist Block, $\frac{1}{2}$ ton (Spec.
CE-10,182). March 18.

Electric Overhead Travelling
Crane (100-ton), for Main Work-
shop at Strathfield. March 28.

Front End Loaders, Petrol or
Diesel, bucket cap. $\frac{1}{2}$ cub. yd.
(Spec. CE-2658). March 21.

High-Speed Multi-Cylinder Com-
pression Ignition Oil Engines, Ver-
tical Type (27), of approx. 180
B.H.P., at 1,800 R.P.M. (Spec.
2221). March 14.

Indoor Type Oil Circuit
Breakers (33,000-volt, 1,000 M.V.A.)
and Associated Equipment. Ex-
tended to March 14.

Mobile Crane—Diesel - Electric,
Petrol-Electric or Straight Diesel,
cap. 6 tons up to 8 ft. (Spec. CE-
2654). March 13.

Overhead Loaders, Diesel or
Petrol, with Pneumatic Tyres,
cap. bucket approx. $\frac{1}{2}$ cub. yd.
(Spec. CE-2656). March 21.

Supervisory Control Equipment,
for Western Line Electrification
(Spec. 1283). April 11.

Switchgear, Compound - filled,
11,000 Volt., for Martin Place
Sub-station (Spec. 1285). March
28.

DEPARTMENT OF PUBLIC
WORKS.

Crawler Track Tractors (3),
approx. 120 h.p. March 14.

Electrically - driven Sewage
Pumping Plant, for Hay Sewerage
Augmentation (Spec. 45-50/51).
March 19.

Photo-Electric Control Relays.
March 14.

Valve, one Foot, and Strainer.
March 14.

DEPARTMENT OF SUPPLY.

Cloud Searchlights (40). March
15.

Power Transformers and Chokes.
March 16.

METROPOLITAN WATER,
SEWERAGE AND
DRAINAGE BOARD.

Concrete Mixers (20), $\frac{1}{2}$ cub. ft.
wet cap., pneumatic-tyred, trailer-
(Turn to page 83.)

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ENGINEERING CO

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Works, Sheet Metal Works,
Steel Fabrication, Oxy and
Electric Welding.

LA3414 LA1871

CURRENT TENDERS - contd.

type, and 3 spare engines (P.T. 393). April 17.

Concrete Mixers (8), 15 cub. ft. wet cap., 5 fitted with Diesel Engines, and 3 with electric motors, and supply of 1 spare electric motor and 1 spare Diesel engine (P.T. 399). April 17.

Cylindrical Copper Screens (10), for Reservoir Outlets (Job 2482). March 13.

Horizontal Spindle Centrifugal Type Sewage Pumping Units, Electrically Driven (2), (Contract 2973). April 10.

Pressure Reducing Valve, for 4 in. Main (Job 2484). March 13.

STATE CONTRACTS CONTROL BOARD.

Ladders. March 13.

Relax Vacuum Bottle Filling Machine. March 14.

SYDNEY COUNTY COUNCIL.

Aerial Service Cable during period 1st July, 1951, to 30th June, 1952 (Spec. 1510). March 15.

Base Exchange Raw Water Softener, for Evaporator Plant, Bunnerong "B" Power Station (Spec. 1528). March 15.

Current Limiting Reactors, for Pyrmont "B" Power Station (Spec. 1541). April 5.

Direct Current Switchgear, for Pyrmont "B" Power Station (Spec. 1534). March 29.

Electric Lamps, for Street Lighting and General Purposes (Spec. 1512). Extended to March 15.

Hard Drawn Bare Copper Cable and Copper Wires during period 1st July, 1951, to 30th June, 1952. March 15.

Industrial Shunting Locomotives, Diesel, Electrical (2), for Pyrmont "B" Power Station (Spec. 1542). April 12.

Low-voltage Cables, for Pyrmont "B" Power Station (Spec. 1533). April 5.

Metalclad Switching Equipment, 5,000 volt, 250 MVA, for Darlinghurst Sub-station (Spec. 1518). April 19.

Miscellaneous Pumping Sets, for Bunnerong "B" Power Station (Spec. 1543). March 29.

Mobile Testing Equipment, High-voltage (Spec. 1524). April 19.

Overhead Transmission Line (132,000 Volt), Lugarno to Homebush (Spec. 1493). March 15.

Overhead Loader, Motor-driven, Self-propelled, New or Second-hand, for Bunnerong Power Station (Spec. 1535). March 28.

Overhead Ash Handling Cranes, Electrically Operated (2), for Bunnerong "B" Power Station (Spec. 1481). March 29.

Relays and Associated Equipment, for Bushbar Protection at Homebush Sub-station (Spec. 1522). April 26.

Rubber Insulated Cables during the period 1st July, 1951, to 30th June, 1952 (Spec. 1509). March 15.

Transformer Winding Temperature Indicators (Spec. 1519). April 12.

Turbine Diaphragms, for Bunnerong "A" Power Station (Spec. 1529). March 15.

(Turn to page 84.)

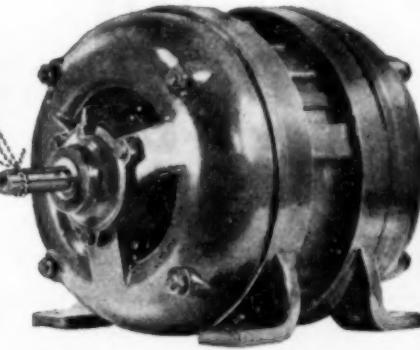
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CURRENT TENDERS - contd.

Turbine Blading, for Pyrmont "A" Power Station (Spec. 1530). March 15.

MISCELLANEOUS.

Air Compressor, Trailer Type, of 100 cub. ft. per minute capacity; General-Purpose Light Motor Truck of 30 cwt.-2-ton capacity; Overhead Loader of 1 cub. yd. cap., approx. 40 h.p.; Power Chain Saw with 3 ft. Cutter Bar; Portable Winch, Single or Double Drum, with Clutch and Brake; Stationary Engine, Petrol or Kerosene, 8 h.p., for Shire of Dumaresq. March 15. Centrifugal Pumping Plants, Electrically Driven (2), (Contract W-18), for Shire of Shoalhaven. March 26.

Compressor, mounted on 2 Pneumatic Tyred Wheels, equipped with Concrete Breaker, Rock Drill

and Clay Spade, for Municipality of Queanbeyan. March 22.

Crawler Tractors (2), complete with Dozer Equipment; Motor Graders (2); Tipping Trucks (6) — 5 cub. yd. Bodies, for Shire of Manning. March 23.

Heavy-duty Motor Grader, Diesel Operated, Medium Motor Grader, for Municipality of Condobolin. March 12.

Metal-clad Switchgear, High Tension, for Municipality of Manly. April 23.

Motor Patrol Grader, Diesel Powered, fitted with "V" Type Scarifier, for Shire of Bland. March 12.

Motor Grader, Power Controlled, with or without Cab, fitted with Scarifier, for Shire of Wingadie. March 14.

Pneumatic-tyred Tractor Wheel Scoop, 2 cub. yd. cap.; Arc Welder, Portable, Petrol-driven, of 250 amp., and Two-wheel Trailer; Front-End Loader, with approx. 2/3 cub.

yd. Shovel; Pneumatic-tyred Caravan, 2-Berth, for Bibbenluke Shire Council. March 18.

Transformer, 750 K.V.A., 33/11 K.V., three-phase, for Bega Valley County Council. March 12.

Sand Papering Machine, Triple Drum. March 28.

Universal Saw Trimmer (Contract 58,704). April 11.

DEPARTMENT OF PUBLIC WORKS.

Kerosene Hot-Water Service, Supply and instal, for Upper Fern-tree Gully. March 13.

Kerosene Hot-water Service, Supply and instal, for Woodside. March 20.

VICTORIA

GOVERNMENT RAILWAYS DEPARTMENT.

Automatic Air Compressor; Spray Guns, Twin Head (5). April 18.

Back Stripping Machine. April 11.

Fork Lift Trucks (Contract 58,687). March 28.

Front End Loader (Contract 58,688). March 14.

Needle Perforating Machine. April 18.

Pen Ruling Machine. April 18. Power Proof Press, Hand-fed. April 11.

MELBOURNE AND METROPOLITAN BOARD OF WORKS.

Light Mobile Cranes (8). March 18.

MELBOURNE AND METROPOLITAN TRAMWAYS BOARD.

Air-operated High-pressure Power Pump, for Motor Bus

(Turn to page 85.)

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CURRENT TENDERS — contd.

Lubrication (Tender 1616). March 12.

Electric Travelling Head Cross-cut Saw (Tender 1617). March 12.

Two-way Mobile Radio Communication (Tender 1614). May 28.

**STATE ELECTRICITY
COMMISSION.**

Belt Conveyors, for Tanjil East Quarry (Spec. 50-51/287). March 28.

C.I. Fullway Valves (Spec. 50-51/285). April 4.

Chemical Injection—High Pressure Drain, Blow Down, and Master Pressure Gauge Piping and Accessory Equipment (Spec. 50-51/230). April 4.

Current Limiting Reactors (Spec. 50-51/270). April 18.

Derrick Crane, Electrically Operated, 5-ton (Spec. 50-51/279). March 28.

Electrical Indicating and Recording Instruments, Switchboard-type (Spec. 50-51/260). April 18.

Fuel Oil, for Stationary Diesel Engines (Spec. 50-51/274). March 14.

Lathes, for Central Base Workshops (Spec. 50-51/266). March 21.

Porcelain Disc Insulators, for Transmission Lines (Spec. 50-51/257). April 4.

Rock Crushing and Screening Plant (Spec. 50-51/243). March 21.

Sawmill Plant, for Yalbourn Area (Spec. 50-51/267). March 21.

Static Rectifier Plant, 11,000 volt. (Spec. 50-51/261). May 2.

Steel Cored Aluminum Conductor. Extended to March 14.

Time Switches (Spec. 50-51/233). March 21.

Turbo-Generating Set, Steam, 30,000 K.W. (Spec. 50-51/171). March 28.

Valves, for Bled Steam, Feed Pump Exhaust (Spec. 50-51/276). April 4.

MISCELLANEOUS.

Quarrying and Crushing Plant, with necessary Auxiliary Equipment, for Shire of Wycheeproof. March 31.

QUEENSLAND

BRISBANE CITY COUNCIL.

Step Down Transformers (6), 7,500 kVA, 33,000 V. to 11,000 V. (Con. E.I./1951). April 20.

Underground Cable, Single Core, 11,000 V., P.L.L.C. (Contract E-2/1951). April 8.

**GOVERNMENT RAILWAYS
DEPARTMENT.**

Fabricated Structural Steel (1,200 tons). March 22.

Oil Storage Tanks. March 18.

**STATE ELECTRICITY
COMMISSION.**

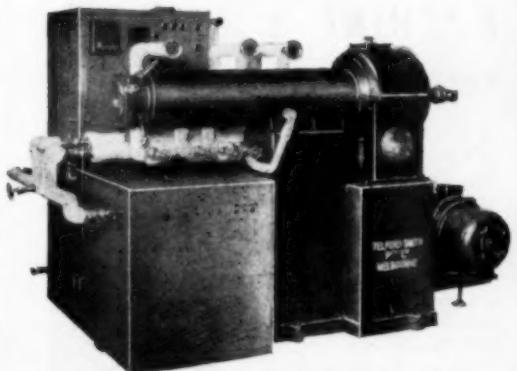
Generating Sets, Steam-driven, 150 pounds per sq. in. March 21.

Light and Power Points and Associated Equipment (Spec. 282). March 21.

(Turn to page 86.)

EXTRUDERS for PLASTICS

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2½in. OIL-HEATED EXTRUDER

High Temperature Thermostatic Control — instant cooling.
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Capacity 1 1/4" x 24"

★ Direct drive from built-in flange mounted motor through an eight speed gear box to spindle.

★ All gears are of heat-treated nickel alloy steel, and shafts run in ball bearings in a totally enclosed gear box.

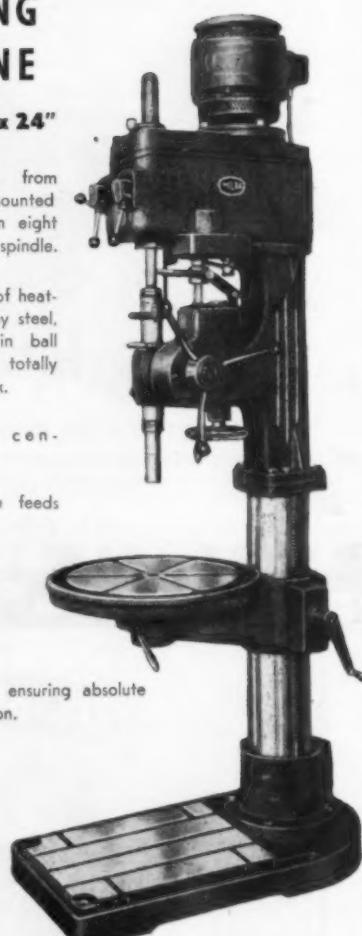
★ Convenient, centralised control.

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★ T slotted base — circular table swings round column.

★ Sturdy design, ensuring absolute rigidity in operation.

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Underhill, Day & Co. Pty. Ltd., Adelaide St., Brisbane.

South Australia: Plant Equipment Co. Ltd., 18 Hanson St., Adelaide.

CURRENT TENDERS — contd.

Oil Circuit Breakers (Spec. 218). Extended to March 14.

Transformers (Spec. 259). March 28.

MISCELLANEOUS.

Steel Pipe Line and Associated Works for Tully Falls' Hydro Electric Scheme. July 22.

Coal Handling Plant, for E. Perth Power House. April 19.

Gas Making and Ancillary Plant (Sch. 23A, 1951). Sept. 27.

Saw Dust Separator, Supply and erect. March 15.

Transformers, 2,000 kVA. March 22.

Water Meters, 1 in. and 2 in. (Sch. 11A, 1951). March 15.

SOUTH AUSTRALIA

GOVERNMENT RAILWAYS DEPARTMENT.

Bogie Ore Wagons (10t), 3 ft. 6 in. gauge. April 2.

HARBOURS BOARD.
Cast Steel Cutter and Spare Blades. March 15.

SUPPLY AND TENDER BOARD.

Conveyor Chains. April 2.
Four Cutter Planing Machine, 9 in. x 3 in. April 2.
Vertical Twin Tandem Band Saw; **Horizontal Band Saws**. Received. April 2.

NEW ZEALAND

HYDRO ELECTRIC DEPARTMENT.

Auxiliary generating sets, 825 kVA, two (Con. 168). Para. also Auckland, Christchurch, London, Paris, Washington, and Montreal. March 13.

Accepted Tenders

COMMONWEALTH

DEPARTMENT OF SUPPLY.
Sheets (File No. C.4/150/74).
A.P.I. Cables & Insulation Pty. Ltd., F229/10/-.

Sheets (File No. C.4/150/74).
P. Rowe Pty. Ltd., f867.

Firebricks (File No. C.4/158/60).
Robert Bryce & Co. Pty. Ltd., f1,225.

Ice Chests (File No. C.4/159/85).
F. W. Clayton & Son, f6,855/9/5.
(Turn to page 87.)

WEST AUSTRALIA

GOVERNMENT TENDER BOARD.

Bogies, for Railway Wagons. April 5.



Accepted Tenders—Continued

Ethylene Glycol, Mono, Ethyl Ether (File No. C.4/161/75). Swift & Co. Ltd., £464/7/-.

Extinguishers, Fire (File No. C.4/165/31). Harrisons, Ramsay Pty. Ltd., £424.

Tools, Screwcutting, Sparking Plugs (File No. C.4/171/58). McPhersons Ltd., £54/17/9.

Unit, X-Ray (File No. C.4/174/43). Stanford X-Ray Co. Pty. Ltd., £5,060/10/-.

Cord for Kitbags (File No. C.4/163/28). F. W. Green, £2,233/9/8.

Tables, Recreation (File No. C.4/168/88). Hugh Hudson's, £3,065/5/-; Chapman, Son & Davidson Pty. Ltd., £7,620; R. Brown Manufacturing Co. Pty. Ltd., £6,781/5/-; J. Trembath, £2,000; Mathias & Co. Ltd., £1,000; and Hugh Hudson's, £457/10/-.

Tablets, Sulphadiazine (File No. C.4/174/63). Rotary Tabletting Corporation Pty. Ltd., £8,370.

Penicillin (File No. C.4/174/63). Imperial Chemical Industries of Australia & New Zealand Ltd., £1,125.

Liquid Cresol Saponated (File No. C.4/174/63). F. H. Faulding & Co. Ltd., £2,062/10/-.

Tablets, Sulphadiazine (File No. C.4/174/63). Boots Pure Drug Co. (Australia) Pty. Ltd., £3,562/10/-.

Crockery (File No. C.4/257/248).

W. E. Bird Ltd., N.S.W., £1,769/8/10.

Mattresses, Stretcher, Field (File No. C.4/250/144). Industrial Packaging Service, £13,914/13/4.

Boots, Ankle, Black (File No. C.4/203/36). McMurtrie (N.S.W.) Pty. Ltd., N.S.W., £2,173.

Mattresses and Pillows (File No. C.4/250/165). Johnston's Pty. Ltd., £442/10/-.

Cloth, Cheese (File No. C.4/250/173). T. C. Beirne Ltd., £214/3/9.

Coats, Black, Rubber, Water-proof (File No. C.4/251/119). Dunlop Rubber (Australia) Ltd., £51/17/6.

Belts, Waist, Trouser (File No. C.4/253/100). G. V. Muider, £1,480.

Pillowslips (File No. C.4/258/110). Morpit Manufacturing Co. £7,106/15/1.

Sheets (File No. C.4/258/110). Co-Operative Wholesale Services Ltd., £712/19/4; Heine Bros. Distributors Pty. Ltd., £22,100.

Gloves, Leather, Heding (File No. C.4/206/17). A. W. Hansor Pty. Ltd., £442/10/-.

Bags, Hessian (File No. C.4/207/7). J. Gadsden Pty. Ltd., £1,208/2/10.

Bags, Coke (File No. C.4/207/8). A. Abrahams & Sons Pty. Ltd., £68/15/-.

Mattresses, Hospital, Fibre (File No. C.4/250/151). Queensland Industries Institution for the Blind, £8,000.

Greatcoats (File No. C.4/252/23). C. J. Wilson Pty. Ltd., £15,335/6/3.

Socks, Wool, Lightweight (File No. C.4/256/12). Lincoln Mills (Aust.) Ltd., £10,115/12/6.

Socks, Worsted (File No. C.4/256/12). Yarncraft Hosiery Mills, £2,152/7/.

Socks, Wool (File No. C.4/256/18). Eastaugh Ltd., £3,136/5/-.

Cloths, Drying (File No. C.4/257/108). The Myer Emporium Ltd., £82/4/-.

VICTORIA

GOVERNMENT RAILWAYS DEPARTMENT.

Bare Hard Drawn Stranded Copper Conductor (Con. 58,596). British Insulated Callender's Cables Ltd. Rates.

PUBLIC WORKS DEPARTMENT.

Food Containers, for Kew Mental Hospital. Milgar Stainless Pty. Ltd., £2,970.

Kitchen Fittings, for Ararat Mental Hospital. Milgar Stainless Pty. Ltd., £249.

Food Containers, for Baralat Mental Hospital. Milgar Stainless Pty. Ltd., £784.

Kitchen Fittings, for Gresswell Sanatorium. S. N. Lythgo, £95/5/6.

QUEENSLAND

MISCELLANEOUS.

Motor Trucks, with 5 cu. yds. Tipping Bodies, Hydraulic Hoists, and Dual Rear Wheels (six). Leyland Motors Ltd., £14,120, for Glemgallan Shire Council.

Mobile Crane. P. L. & G. Potts, £3,688, for Johnston Shire Council.

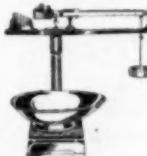
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Granular soda ash, 1,000 tons, £25,375. Imperial Chemical Industries of Aust. and New Zealand, Ltd.

(Turn to page 88.)



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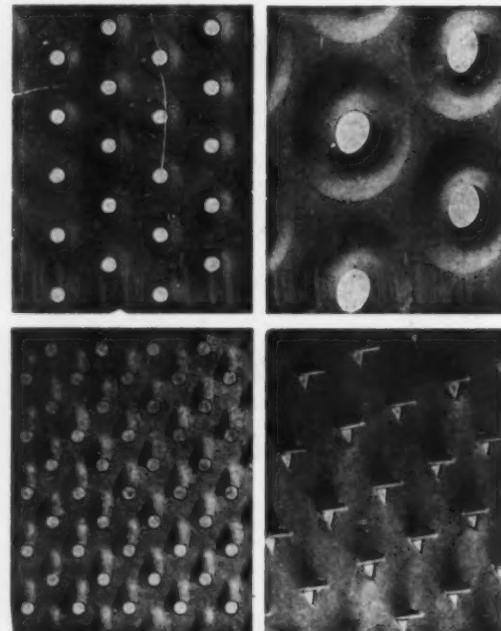
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Accepted Tenders—Continued

Ammonium sulphate, £1,881. A.C.F. & Shirleys Fertilisers Ltd. Penetration bitumen, 85/100, £19/14/- per ton. Caltex Qld. Pty. Ltd. Cement lining of cast iron pipes, £10,675. Monier Pipe Co. Ltd.

WEST AUSTRALIA

GOVERNMENT TENDER BOARD.

"Treeclearer", portable, self-propelled saw, £300. Tree Clearing Machinery Co. of W.A. (1944).

Radio Receiver, £70. Nicholsons Ltd.

"Meigs" Goodwin Concrete Mixer, 5 cu. ft., £222. William Simpson & Sons (A/asia.) Pty. Ltd.

"Alston" Windmill, £205. Malloch Bros.

Surveying Equip., Item 1, £11; Item 2, £4/10/-; Item 3, £1/8/-; Item 4, 19 6/- ea. Thomas Optical

& Scientific Co.; Item 1, £1/8/-; N. H. Seward Pty. Ltd.

Motor spares, 31st December, 1950, to 30th June, 1951, at rates. G.I.G. (Western Aust.) Pty. Ltd.; Mortlock Bros.; Armstrong Dimmit; Atkins (W.A.) Ltd.; The Goodwill Tyre & Rubber Co.; Geo. Wills & Co. Ltd.; Allan Campbell; Coventry Motors Replacements Pty. Ltd.; Atwood Motors Pty. Ltd.

Fire fighting equip., Sth. Fremantle Power Station, Item 3 (a), £80/17/- ea.; Item 3 (d), £92 ea.; Item 3 (g), £14/10/-; Atkins (W.A.) Ltd.; Item 3 (b), £95; Item 3 (e), £55 ea.; Item 3 (f), £20; Item 4 (e), £14 ea.; Item 4 (f), £54 ea.; Item 4 (g), £10 ea. Horsburgh Bros.; Item 3 (h), £5 ea.; Item 4 (d), £5 ea.; Item 5, £2,114; Item 6, £2,890. Wormald Bros.; Item 4 (a), £4/2/- ea. Harrison, Ramsay Pty. Ltd.

Arc welder, 9 kVA, 440 V., 40/50 cycle, £100, less 10 p.c. G. G. Martin Ltd.

Kitchen equip., gas operated, Item (a), £378; Item (b), £35/10/-; Item (c), £311. Melters Ltd.

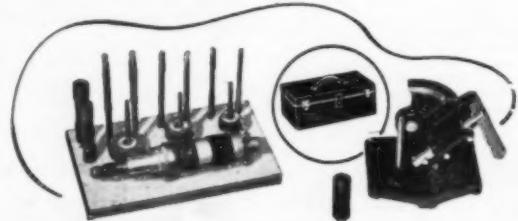


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Late Open Tenders

NEW SOUTH WALES

GOVERNMENT RAILWAYS DEPARTMENT.

Electric Rail Postheater (for Normalising Welded Rail Joints), at Chullora (Spec. 548). May 16. Switchgear, 11,000-volt. Indoor, Metal Enclosed, for Lawson Sub-Station (Spec. 1286). June 6.

SYDNEY COUNTY COUNCIL.

Low Voltage Paper Insulated Cables (Spec. 1549). April 12. Miscellaneous High-pressure Steam and Feed Piping, for Turbo-Alternators, Nos. 20 and 21, for Fyrmont "B" Power Station (Spec. 1552). April 12.

DEPARTMENT OF PUBLIC WORKS.

Floor Cramps. March 16. Gas Cafe Boiler. March 14.

(Turn to page 89.)

LATE OPEN TENDERS—Contd.

Letter Boxes. March 16.
Linesman's Safety Belts. March 14.
Petrol Irons. March 16.
Terra-Cotta Roofing Tiles (Marseilles Pattern). March 14.

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GOVERNMENT RAILWAYS DEPARTMENT.

Amplifiers and Rail Flaw Detectors. April 11.

Catenary Sheaves. March 21.
Scaffolding Units. March 28.

MELBOURNE AND METROPOLITAN TRAMWAYS BOARD.

Second-hand Motor Buses (Tender "O" 149). March 19.

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Front End Loaders (6), with 1 cub. yd. cap. March 13.

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GOVERNMENT RAILWAYS DEPARTMENT.

Overhead Electric Travelling Cranes (3), of 5 tons cap. and 3 to 10 tons cap. March 15.

SOUTH AUSTRALIA

STATE ELECTRICITY TRUST.
Mobile Crane, Pneumatic Tyred. 11-5 tons cap. March 16.

DEPARTMENT OF RAILWAYS—NEW SOUTH WALES.

TENDERS enclosed in sealed envelopes which must be endorsed "TENDER FOR . . .", addressed to the Commissioner for Railways, 19 York Street, Sydney, will be received on the date and time shown for the service specified. Tenders may be lodged in the Tender Box, Room 504A, 5th Floor, Railway House, 19 York Street, Sydney, or posted to that address.

Wednesday, 16th May—
12 noon.

For supply of one Electric Rail Post-heater (for Normalising Welded Rail Joints) at Chullora, near Sydney. Specification No. 548, price 2/6, obtainable from Chief Civil Engineer, First Floor, 15 York Street, Sydney.

No tender necessarily accepted. Make cheques payable to Commissioner for Railways. Any tender unaccompanied by deposit, as provided in conditions of contract, may be rejected.

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Mr. A. S. Horne, of Prospect, S.A., has been elected president of the Federal Council of Glove Manufacturers of Australia, in succession to Mr. Ernest Marks of Julius Kayser (Aust.) Pty. Ltd., who resigned from the position

because his company is not now manufacturing gloves. Mr. Horne has long been prominent in the leadership of glove industry organisations, both State and Federal, and is obviously well qualified to stand at the head and forefront of the glove industry in its present important negotiations with Commonwealth Government

regarding tariff protection and other matters.

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Mr. W. H. C. Lewis, managing director of Gibson, Battle & Co. Limited, Sydney, has joined the board of Renold Chains (Aust.) Pty. Ltd., Victoria.

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—•— INDEX OF ADVERTISERS •—

Vol. XXXV — No. 1823 . . . MARCH 10, 1951.

Page.	Page.
A. & A. Eng. Co.	40
Abbott, J. A.	68
Acta Ltd.	41
Advanc Tyre & Rubber Co. Pty. Ltd.	90
Almet Industries Pty. Ltd.	11
Amplion (A'sia) Pty. Ltd.	85
Apac Industries Pty. Ltd.	35
Armstrong, R. H., & Co. Pty. Ltd.	37
Arendsen, H., & Sons Pty. Ltd.	15
Artay Manufacturing Co.	84
Atkins, W., Pty. Ltd.	84
Australian Cotton Mfg. Co. Pty. Ltd.	16
Australian Engineers & Metal Stampers Pty. Ltd.	79
Australian General Electric Pty. Ltd.	75
Automatic Electric Heating Appliances Pty. Ltd.	98
Ayton Engineering Instruments	82
B.S.F. Pty. Ltd.	85
Balfour & Co. Ltd.	25
Ballarat Litho & Printing Co. Pty. Ltd.	85
Bishop's Implements Pty. Ltd.	71
Borthwick, T. A., Pty. Ltd.	86
Bradley Washfountain Co. of Aust.	76
Bradshaw Automatics Pty. Ltd.	78
Brenco Pty. Ltd.	47
Brock, J. & F., Bros.	87
Brolite Pty. Ltd.	21
Bryans, E. S.	38
C.C. Die Castings Ltd.	99
C.B.D. Piston Co.	64
C.R.M. Division Lysaght's Works Pty. Ltd.	91
Carr Fastener Co. of A. Ltd.	41
Cartwright, O. F.	64
Cash Eng. Co.	60
Cassolin Pty. Ltd.	74
Cast Arthur	65
Ceels Pty. Ltd.	10
Churcher, R. B., Pty. Ltd.	70
Clayton, Joel & Co.	92
Cole Eng. Pty. Ltd.	42
Comerford, C. F.	87
Commonwealth Moulding Pty. Ltd.	74
Conaghan, Robert A., & Company	12
Consolidated H.L. Lift Hoists Pty. Ltd.	53
Cox & Bates	62
Crane, G. E., & Sons Ltd.	80
Crystal Laporte Pty. Ltd.	37
Cumming, J., & Sons	60
Custer, D. W., Pty. Ltd.	93
Cyclone Co. of Aust. Ltd.	9
Davies & Collison	65, 66
Demco Machinery Co. Pty. Ltd.	86
Derby & Co. (A.) Pty. Ltd.	41
Dewey & Almy Pty. Ltd.	30
Diamond & Boast Products (Australia) Pty. Ltd.	45
Dimet Pty. Ltd.	23
Donald Eng. Co.	46
Dychem Trading Co. Pty. Ltd.	45
E. W. Fittings Ltd.	46
Eagle & Globe Steel Co. Ltd.	28
East Asiatic Co. (A.) Pty. Ltd.	68
Edmonds, N. E.	82
Eglington & Co. Ltd.	84
Electronic Industries Imports Pty. Ltd.	44
Fabricated Products Pty. Ltd.	29
Factory Equipment & Eng. Works	78
Falkiner Machinery Co. Pty. Ltd.	62
Ferrier, E. S. & F.	66
Ferro Enamels (Aust.) Pty. Ltd.	3
Flavell, A., Pty. Ltd.	97
G.M.F. Electric Motors Pty. Ltd.	27
Gadsden, J., Pty. Ltd.	80
Gardner, Waern & Co. Pty. Ltd. (Front Cover)	
Garrett, Davidson & Matthey Pty. Ltd.	73
Gayfer, G. R., & Co.	51
General Abrasives Pty. Ltd.	46
General Tools & Nuts Pty. Ltd.	73
Goodall & Co. Pty. Ltd.	72
Goodwin, J. & Co.	56
Goodyear Tyre & Rubber Co. (A.) Ltd.	4
Gordon Bros. Pty. Ltd.	52
Griffith, Hassel & Griffith	64, 66, 67, 68, 69, 70
Gutwirth & Sons Pty. Ltd.	59, 63
Hall, J. R., & Co.	58
Harris, Hutchinson Pty. Ltd.	62
Harrison, Ramsay Pty. Ltd.	38
Hart, John, Pty. Ltd.	82
Hayman, E.	85
Hele, John, & Son Pty. Ltd.	76
Henderson's Federal Spring Works Pty. Ltd.	70
Henderson, P. & W. Ltd.	34
Herbert, Alfred (A'sia) Pty. Ltd.	41
Herbert, A. E. Pty. Ltd.	82
Hobson Eng. Co.	82
Hoelle, J. J., & Co.	16
Holder, Stroud Pty. Ltd.	58
Hoover (Aust.) Pty. Ltd.	5
Hordern, C. & Co.	40
Hughes, R. Pty. Ltd.	72
Insulwool Products Pty. Ltd.	95
International Combustion (A'sia) Pty. Ltd.	24
Johnson & Phillips Ltd.	14
Jones Bros Coal Pty. Ltd.	41
Jones & Rickard Pty. Ltd.	44
John, M. B., Limited	24
Joseph Auto Het Pty. Ltd.	76
Kelwood Pty. Ltd.	43
Kenworth Rubber Ltd.	13
Langdon, H. J., & Co. Ltd.	35
Lewis Office Machine Co.	63
Liberty Motors (Aust.) Pty. Ltd.	60
Lincoln Electric Co. (Aust.) Pty. Ltd.	83
Lock Tool Co. (Aust.) Pty. Ltd.	94
Ludowici, J. C., & Son Ltd.	6
Mack, M. E., & Co. Pty. Ltd.	76
Mackie, A. H.	42
Macleod, C. W., & Son	54
Magnus Chemical Co.	81
Mangrove Bolting Ltd.	50
Marson Engineering	52
Manufacturers Equipment Co.	95
Marino Products Pty. Ltd.	68
Marner, G. W., Pty. Ltd.	82
McDonald, L., Ltd.	51
McKay, H. V., Massey Harris Pty. Ltd.	67
McKinlay, Fletcher Pty. Ltd.	63
McLellan, W. J., & Co. Pty. Ltd.	53
Melbourne Wire Works	67
Merlin Industrial Electroplaters	74
Metalex Pty. Ltd.	77
Miller & Co.	40
Minerals Pty. Ltd.	69
Modern Tools Pty. Ltd.	8
Monsanto Chemicals (Aust.) Ltd.	63
Morris, J. Eng. Co.	88
Morris, McMahon & Co.	43
Morison & Bearby Ltd.	62
Murex (A.) Pty. Ltd.	47
N.S.W. Govt. Railways	89
N.S.W. Produce Co. Pty. Ltd.	43
National Control Equipment Pty. Ltd.	62
Nettelfolds Pty. Ltd.	3
Nicholson & Wallbank Pty. Ltd.	58
Nilsen Industrial Group	89
Norris, J. & Co.	40
Norton, Tootill & Co. Pty. Ltd.	100
Oakey, J., & Sons Ltd.	66
Olympic Cables Limited	31
Ormston Rubber Co. Pty. Ltd.	45
Permanent Magnets Pty. Ltd.	80
Philips Electrical Industries of Aust. Pty. Ltd.	65
Phillips, Ormonde, Le Plastrier & Kelson	64
Picot, Essex, R., Pty. Ltd.	92
Pneumatic Tool & Eng. Co. Pty. Ltd.	71
Preston, J. H., Pty. Ltd.	70
Quality Castings Pty. Ltd.	92
Randie Photo Engraving Co. Pty. Ltd.	46
Raymond Hydraulic Transmission Co.	73
Raynor Pty. Ltd.	87
Rice, F. B.	65
Richardson, D. & Sons Pty. Ltd.	88
Richardson Gears Pty. Ltd.	97
Roberts Eng. Co.	40
Roberts, H. & Co.	40
Robertson, C. H.	63
Rodda, S. N., Pty. Ltd.	93
Ryan, F. & T., Bros.	70
S.T.G. Pty. Ltd.	73
Sample, Geo. H., & Son	52
Scruttons Pty. Ltd.	92
Silicate & Dolomite Co. of Aust. Pty. Ltd.	70
Sintered Alloys Ltd.	36
Smith, Copeland & Co. Pty. Ltd.	94
Smith, S. & Sons (Aust.) Pty. Ltd.	8
Sonnerdale Ltd.	18
Standard Chemical Co. Pty. Ltd.	93
Steen, W. B., Pty. Ltd.	46
Steelbilt Ltd.	55
Stott & Underwood Pty. Ltd.	57
Sunshine Porcelain Potteries Pty. Ltd.	82
Super Oil Seals & Gaskets Ltd.	23
Swift & Company Limited	28
Taubmans Limited	80
Taylor & Wearing	85
Telford Smith	85
Thomas Optical & Scientific Co. Pty. Ltd.	58
Thomas, R., & Co., Bros. Pty. Ltd.	60
Tomlin, J. W.	39
Thompson & Williams	81
Thornthwaite & Co.	38, 41, 78
Tyree Electrical Co.	12
University Graham Instrument Co.	17
Van Gelder, J. P., & Co. Pty. Ltd.	72
Warburton, Franki Ltd.	61
Warman & Douglas	78
Waterproofing Concrete Products Ltd.	43
Watson, Victor Ltd.	11
Watt, A. V., & Sons	41
Wedderburn, J. W., & Sons	87
Wells, W. H., Pty. Ltd.	29
Westate Tube & Eng. Co. Ltd.	50
While, J., & Sons Pty. Ltd.	93
Wilson & Gilkes	40
Wilson Waratah Metal Co. Ltd.	41
Witzig, P., & Co. Pty. Ltd.	29, 96
Woods, W. E., Ltd.	37
Woodward & Thurston Pty. Ltd.	62

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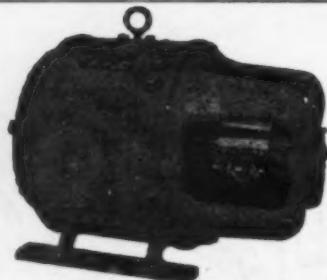
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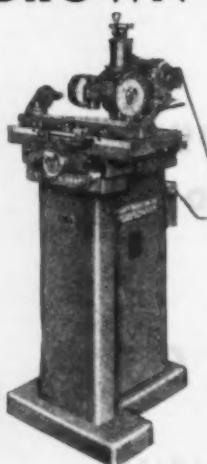
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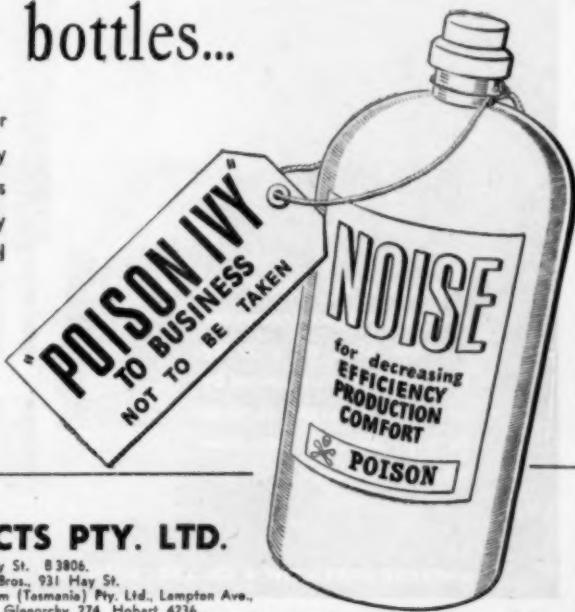
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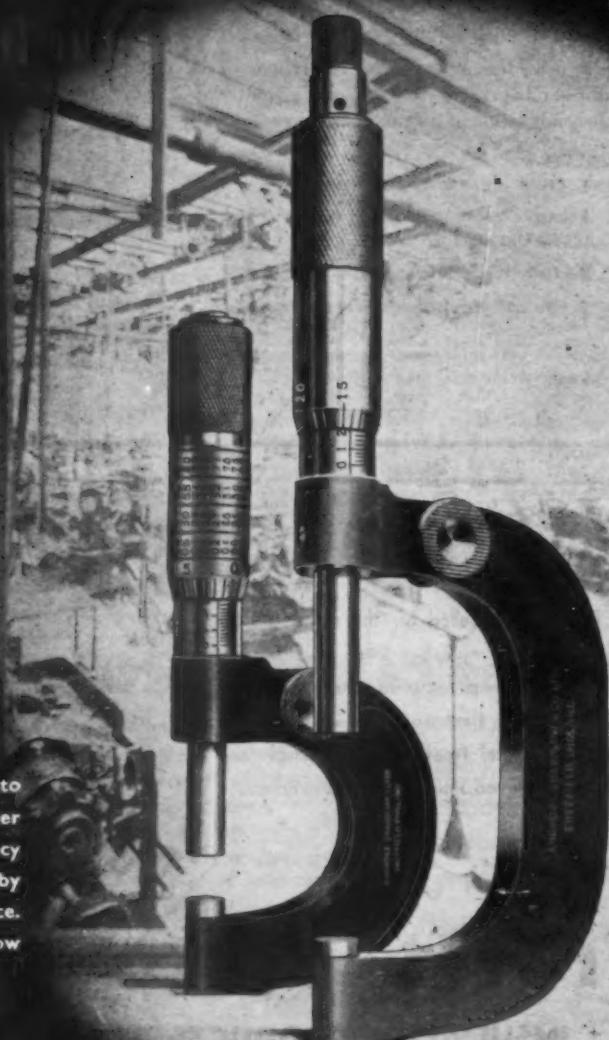
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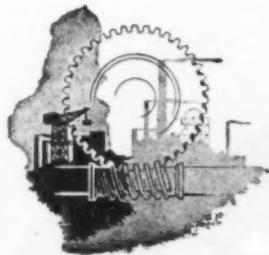
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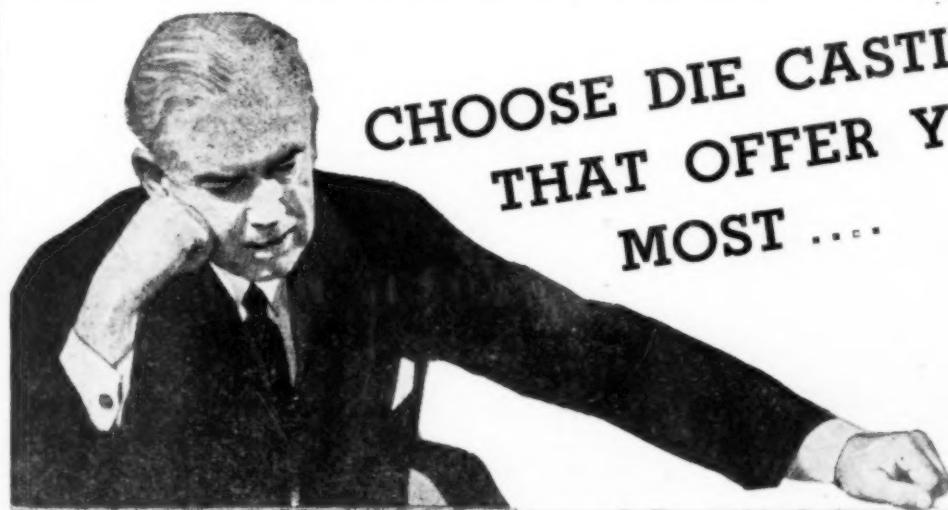
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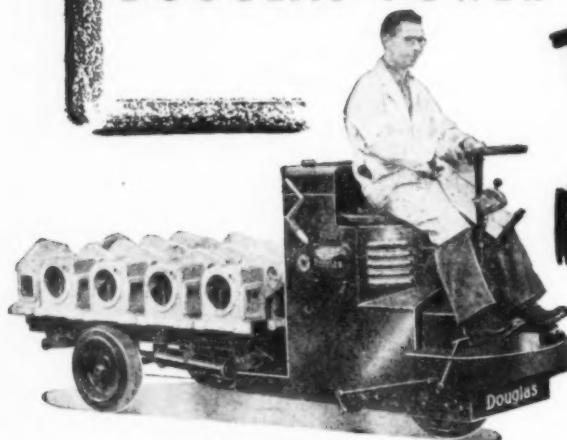
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